

County Employees' and Officers' Annuity and Benefit Fund of Cook County

A Component Unit of  
Cook County, Illinois

# COMPREHENSIVE ANNUAL FINANCIAL REPORT

For the Fiscal Years Ended December 31, 2017 and 2016





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A Component Unit of Cook County, Illinois

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For the Fiscal Years Ended December 31, 2017 and 2016

Prepared by the staff of the  
County Employees' and Officers' Annuity and Benefit Fund of Cook County

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An aerial, high-angle photograph of a dense city skyline, likely New York City, featuring numerous skyscrapers of varying heights and architectural styles. The buildings are packed closely together, with some prominent structures like the Empire State Building and the Chrysler Building visible. In the background, a large body of water, possibly a bay or harbor, stretches across the horizon under a sky with scattered clouds. The overall image has a slightly desaturated, monochromatic feel.

# Introductory Section

*This section provides information regarding the County Employees' and Officers' Annuity and Benefit Fund of Cook County's Certificate of Achievement, Board of Trustees, consultants, and organizational structure, as well as a letter of transmittal.*

# Certificate of Achievement



Government Finance Officers Association

## Certificate of Achievement for Excellence in Financial Reporting

Presented to

**County Employees' and Officers'  
Annuity and Benefit Fund  
of Cook County, Illinois**

For its Comprehensive Annual  
Financial Report  
for the Fiscal Year Ended

**December 31, 2016**

*Christopher P. Morill*

Executive Director/CEO



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# Principal Officials

## Retirement Board

**Lawrence L. Wilson, CPA**

President

Ex Officio Cook County Comptroller

**Dennis White**

Vice-President

Elected Forest Preserve District Employee

**Diahann Goode**

Secretary

Elected Cook County Employee

**Robert DeGraff**

Elected Cook County Employee

**Joseph Nevius**

Elected Forest Preserve District Annuitant

**Kevin Ochalla**

Elected Cook County Employee

**John E. Fitzgerald**

Elected Cook County Annuitant

**Bill Kouruklis**

*Ex Officio* Cook County Treasurer (Designee)

**Patrick J. McFadden**

Elected Cook County Annuitant

## Professional Consultants

**Legal Counsel**

Burke Burns & Pinelli, Ltd.

**Auditor**

Legacy Professionals, LLP

**Investment Consultant**

Callan Associates, Inc.

**Consulting Actuary**

Conduent HR Services

**Master Custodian**

BNY Mellon

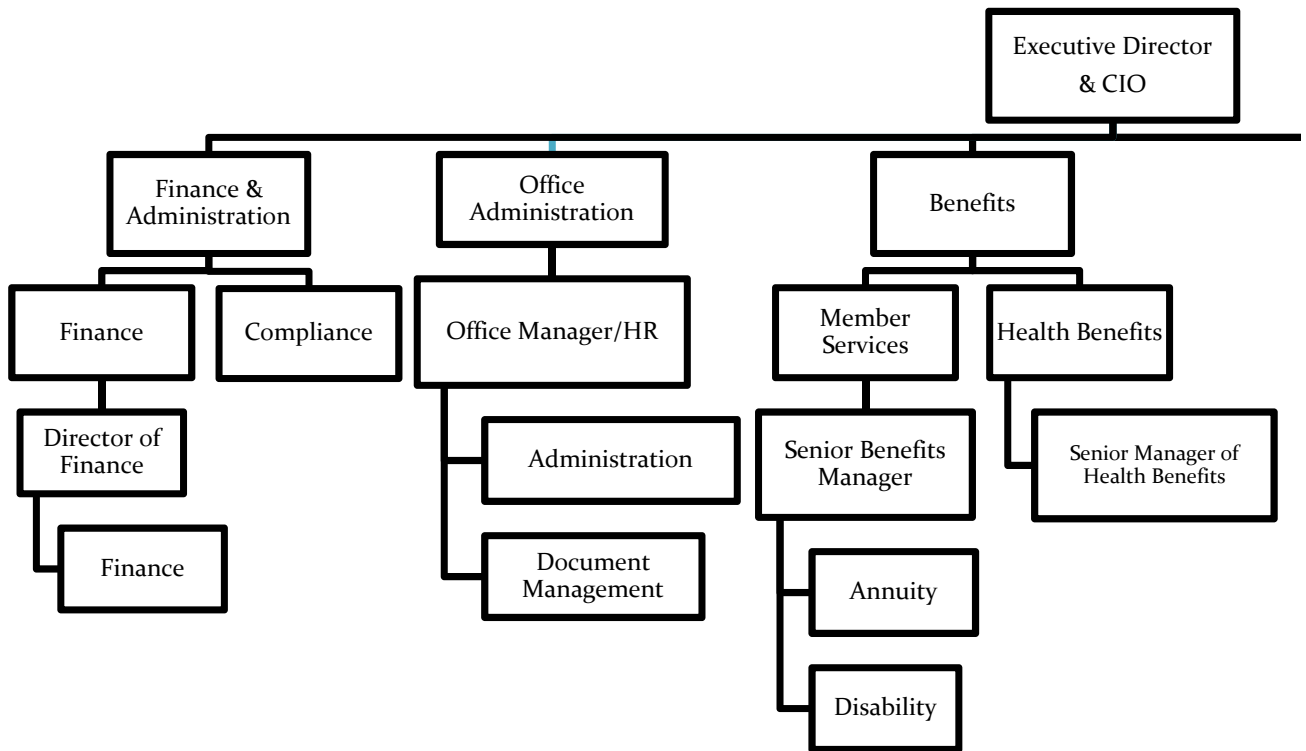
**Custodian**

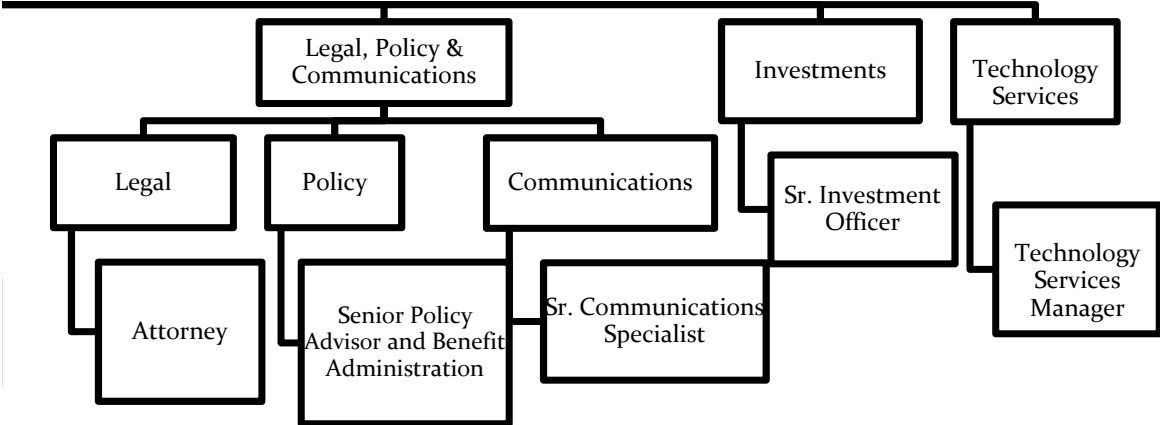
Cook County Treasurer

Investment Managers are listed on pages 82-83.

Brokers used by Investment Managers are listed on pages 84-85.

# Organizational Chart





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# Letter of Transmittal



June 14, 2018

Retirement Board  
County Employees and Officers' Annuity and Benefit Fund of Cook County  
and *ex officio* for the Forest Preserve District Employees' Annuity and Benefit Fund of Cook County  
70 W Madison St, Suite 1925  
Chicago, IL 60602

To the Retirement Board and Our Members:

We are pleased to submit to you the Comprehensive Annual Financial Report ("CAFR") of the County Employees' and Officers' Annuity and Benefit Fund of Cook County ("the fund") for the calendar year ended December 31, 2017. Fund management is responsible for the contents of this report, including the financial, investment, actuarial, and statistical information contained herein.

To the best of our knowledge and belief, the information contained in this report is complete and accurate in all material respects. This report is provided to allow the reader to gain an understanding of the fund's financial position and operational activities. Readers should review this report in conjunction with the Management's Discussion and Analysis (MD&A) found in the Financial Section.

## **Fund Profile**

Established in 1926 by an act of the Illinois General Assembly, the Cook County Fund is a defined benefit public pension fund that is governed by Illinois Pension Code 40 ILCS 5/1-101 et. seq. The fund administers pension, as well as survivor, death, disability, and retiree health benefits to employees and retirees of Cook County, Illinois as well as their eligible dependents and beneficiaries. It is considered a component unit of Cook County and is included in the County's financial statements as a pension trust fund. As of December 31, 2017, the fund consisted of 20,349 active employees, 15,488 retiree annuitants, 2,729 survivor annuitants, and 14,624 inactive members.

The fund is governed by a nine-member Retirement Board ("Board") combined with the Forest Preserve District Fund. The nine Trustees are elected as follows: four are elected by the employees of Cook County and the Forest Preserve District, three are elected by the annuitants of Cook County and the Forest Preserve District and two are *ex officio* seats appointed by the Comptroller and Treasurer of Cook County. Elected Trustees serve staggered three-year terms resulting in no more than three positions being subject to election each year. The fund has common trustees and shares office space and administrative services with the Forest Preserve Fund. The fund is administered in accordance with Illinois Compiled Statutes (ILCS) Chapter 40, Articles 1,9,10, and 20.

## INTRODUCTORY SECTION

### Letter of Transmittal (continued)

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#### Summary of Financial Experience

The following table illustrates the changes in the Cook County Fund's net position between December 31, 2017 and December 31, 2016 (numbers in millions):

| Change in Net Position                 | 2017      | 2016 *    | \$ Change | % Change |
|--|-----------|-----------|-----------|----------|
| Total additions                        | \$2,121.0 | \$1,247.1 | \$873.9   | 70.1%    |
| Total deductions                       | \$828.8   | \$774.5   | \$54.3    | 7.0%     |
| Change in net position from prior year | \$1,292.2 | \$ 472.6  | \$819.6   | 173.4%   |

\* Reclassified to conform with the 2017 presentation due to annuitants Healthcare contribution amount.

A more detailed analysis of the fund's financial experience can be found in the Financial Section.

#### Funding

The fund engages an independent actuary, Conduent HR Services (formerly Buck Associates), to perform an actuarial valuation on an annual basis and experience study pursuant to the provisions of the Illinois Pension Code. In an effort to ensure that the actuarial assumptions used to estimate the plan's liability are aligned with current plan experience, the fund conducted an experience review covering the four-year period ending December 31, 2016. Assumption changes of the experience study that were adopted by the Board in April 2018 are reflected in the 2017 valuation. Among the approved changes were revisions to annuitant mortality rates, retirement rates, salary increases, and most notably, the expected actuarial rate of return, which was reduced from the longstanding 7.50% to 7.25%. The combination of changes had the net effect of reducing the plan's actuarial liability by \$300 million.

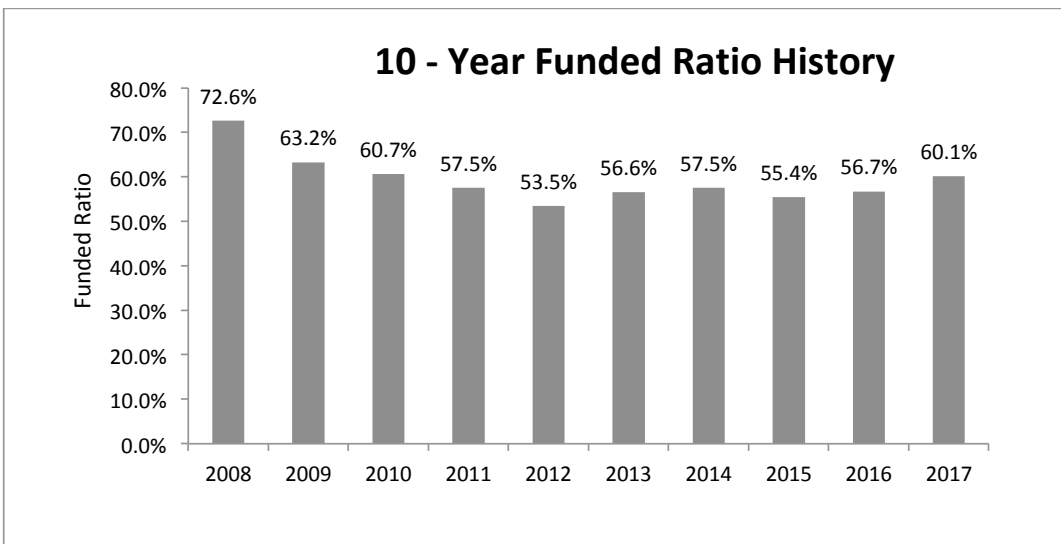
In 2017, the Cook County Fund continued to experience improved financial performance resulting from investment driven growth and supplemental contributions from the Employer. Fund investments returned 15.35% net of fees, exceeding the actuarial assumed rate of return of 7.25%. On an actuarial basis, the fund's assets grew to \$10.1 billion in 2017 from \$9.5 billion the prior year. The \$0.6 billion increase reduced the fund's \$16.9 billion in combined accrued liability of pension and health benefits, resulting in an unfunded actuarial accrued liability of \$6.7 billion.

The combination of strong investment performance and supplemental contributions from the Employer in 2017 also had the positive effect of improving the funded status (the ratio of assets to liabilities) for pension and retiree health benefits combined to 60.09% (vs. 56.73% in 2016). The fund's actuarial accrued liability for pension benefits only was \$15.7 billion and the actuarial value of assets was \$10.1 billion, resulting in an unfunded liability of \$5.5 billion and a funded ratio of 64.75%. The fund's actuarial accrued liability for retiree health benefits was \$1.9 billion. As there are no dedicated assets, the actuarial value of assets was \$0 for retiree health benefits, resulting in an unfunded liability of \$1.9 billion.

The Cook County Administration (Employer) addresses the downward funding trend by identifying an additional contribution source to the fund pursuant to a one-year Intergovernmental Agreement (IGA) with projected shortfall. The supplemental contribution source is derived from the Home Rule Sales Tax, which amounted to an additional contribution of \$270.5 million (140% above the statutory contribution) in 2016 and \$353.8 million (172 % above the statutory contribution) in 2017. For 2018, the Employer is expected to make supplemental payments of \$353.4 million. On a near-term basis, the supplemental contributions serve to bridge the funding shortfall to annual benefit pay-outs. When combined with the plan's investment performance and the savings realized from cost efficiency initiatives, the additional funding was influential in improving the plan's financial position for the

year. As of the date of this letter, the Employer has made additional contributions (pursuant to IGA) to the Cook County Fund totaling \$150,000,000. The Employer is expected to make additional payments in the amounts of: \$25,000,000 on June 30, 2018; \$25,000,000 on July 31, 2018; \$25,000,000 on August 31, 2018; \$25,000,000 on September 29, 2018; \$25,000,000 on October 31, 2018; and \$78,436,000 on or before November 30, 2018 for a total of \$353,436,000. This will significantly alleviate the cash flow burden resulting from the need to liquidate investments in order to pay monthly benefit payments, especially during volatile markets.

The following chart depicts historical funding ratios for Cook County Fund.



A detailed discussion of funding is provided in the Actuarial Section of this report.

On a projected basis, the fund continues to face a funding shortfall without legislative action to establish an actuarially-based funding policy. For the past 19 years, the statutory tax multiple used to determine the employer contribution has been 1.54. According to the 2017 valuation, an actuarially-determined tax multiple of 4.76 is needed to restore solvency and avoid projected depletion of the fund that is estimated by 2042.

### Investments

The Board's authority to invest fund assets is governed by 40 ILCS 5/1-101 et seq. and 40 ILCS 5/9-101 et seq. The fund's Investment Policy, which provides additional strategies and safeguards for the fund's investment objectives, can be found at [CookCountyPension.com](http://CookCountyPension.com).

At year-end, the total invested assets of the fund were valued at \$10.2 billion compared with \$9.0 billion at the end of 2016, an increase of approximately \$1.2 billion. The investment portfolio's net rate of return for the year ending December 31, 2017 was 15.35%, where domestic and international equity, fixed income, real estate and REITs asset classes resulted in positive returns. The Board works to maintain a diversified asset allocation within acceptable risk parameters.

Historically, the investment portfolio has represented an increasing source of funding for benefit payments. In 2017, investment earnings represented more than half of the plan's income – a total of \$2.1 billion in additions

## INTRODUCTORY SECTION

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### Letter of Transmittal (continued)

that also included employer contributions and employee contributions that was offset by \$0.8 billion in deductions consisting of benefits, refunds and administrative expenses.

Additional information regarding performance and investment professionals who provide services to the fund can be found in the Investment Section.

#### **2017 Initiatives**

The fund continues to implement strategic initiatives across member services, organizational flexibility, systems and performance measurement, and liability and risk management. As the annuitant membership grows, the fund continually reviews its strategic and operating imperatives to maintain quality member service.

##### *Retiree Health Benefit*

Beginning January 1, 2017, Medicare eligible members began receiving a comparable prescription drug benefit at a lower cost with cost savings for the fund. Last year, \$6.3 million in savings resulting from the EGWP implementation was a contributing factor to the increase in the 2017 actuarial funded ratio.

In an effort to maximize Medicare as the primary payor of health claims for Medicare eligible members, the fund kicked off planning for a Medicare education program to launch in 2018. Targeted to retiree members at or approaching the Medicare eligibility age of 65, the seminars aim to improve coordination with Medicare by providing members critical information on Medicare eligibility, enrollment, and coverage, and how it works with the fund's retiree health plan. During these events, members also have an opportunity to meet with representatives from the Social Security Administration and the plan's healthcare and pharmacy providers, as well as learn about wellness improvement programs available to them.

##### *Benefits Administration*

The fund maintains its commitment to delivering high-touch customer service an increasing volume of benefit requests that included the processing of over 860 retirement applications in the past year. Member engagement remains a primary focus as the fund implemented targeted stakeholder campaigns and enhanced member communications to address issues ranging from retiree health benefits and member experience at the fund.

The fund moved its office location in November 2017 to improve member services functions and better accommodate our growing membership. The new office location provides members greater privacy, security and more access to counselors for their retirement, disability, and health benefit needs.

In 2017, the fund continued to transition from paper to electronic document management to bring greater ease to member services and reduce the organization's footprint. Systems enhancements improved workflow and collaboration between departments, leading to increased efficiency of benefits administration and improved information security. As of December 31, 2017, more than \$6 million pages of documents were digitized.

##### *Legislation*

The following Public Acts were enacted in calendar year 2017:

#### **Public Act 100-0023 Provisions**

- Added Optional Tier 3 for new hires. The public act added section 1-162 which allows the Cook County Board (Employer) to opt into a Tier 3 plan. If the plan is adopted by Employer ordinance, it would allow



- any future new hire to elect the current Tier 2 plan or the new Tier 3 plan.
- Changes will be effective the late of July 1, 2018 or the date the Board adopts an ordinance to adopt the changes.
- If adopted it would then impact any new hires after six months after the adoption date. The earliest impact would be for new hires on or after January 1, 2019. New hires after January 1, 2019 (or later depending on ordinance date) would have option of the current Tier 2 benefit under section n1-160 or the new hybrid plan established under section 1-162.
- New hires must make an election of which plan within 30 days of becoming a participant. The Fund has the obligation to establish process for making this election and can adopt rules for participation.

**Public Act 100-0542 Provisions**

- Investment consultants to report annually to the Fund regarding search disclosures for MBE, WBE, and DBE which has been implemented.
- Annual disclosure of all compensation or economic opportunity received during the last 24 months from investment advisors retained by the Fund, which has been implemented

**Public Act 100-0554 Provisions**

- requires the Fund, as a lobbying entity, to have a sexual harassment policy, which has been implemented.

**Accounting System & Internal Control**

This report and the financial statements included within were prepared to conform to the principles of governmental accounting and reporting pronounced by the Governmental Accounting Standards Board and the American Institute of Certified Public Accountants.

The financial statements were prepared using the accrual basis of accounting. Under the accrual basis, revenues are recognized in the accounting period in which they are earned, without regard to the date of collection, and expenses are recognized when the corresponding liabilities are incurred, regardless of when payment is made.

The fund maintains a system of internal controls to adequately safeguard its assets and assure the reliability of its financial records. The controls are designed to provide reasonable, but not absolute, assurance that these objectives are met. The concept of reasonable assurance recognizes that first, the cost of the control should not exceed the benefits likely to be derived, and second, the valuation of the cost and benefits requires estimates and judgments by management. Management and the outside auditor continually review the controls for adequacy.

The financial statements included in this report were audited by Legacy Professionals, LLP, who have issued an unmodified opinion for calendar year ended December 31, 2017. A copy of their report is contained in the Financial Section.

**Awards**

The Government Finance Officers Association of the United States and Canada (GFOA) awarded a Certificate of Achievement for Excellence in Financial Reporting to the fund for its CAFR for the fiscal year ended December 31, 2016. This was the eight year that the fund has earned this prestigious award. In order to be awarded a Certificate of Achievement, the fund must publish an easily readable and efficiently organized comprehensive annual financial report. This report must satisfy both generally accepted accounting principles and applicable legal requirements.

## INTRODUCTORY SECTION

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### Letter of Transmittal (continued)

A Certificate of Achievement is valid for a period of one year only. We believe that this current CAFR continues to meet the Certificate of Achievement Program's requirements, and we are submitting it to the GFOA to determine its eligibility for another certificate.

#### **Acknowledgments**

This report was prepared through the combined efforts of the fund's staff under the direction of the Board. On behalf of the Board, I would like to thank the staff and professional consultants for their efforts in compiling this report.

Respectfully submitted,



Nickol R. Hackett  
Executive Director and Chief Investment Officer



# Financial Section

*This section contains the report of the independent auditors, financial statements, analysis, and supplemental financial information.*

# Report of Independent Auditors



## REPORT OF INDEPENDENT AUDITORS

To the Board of Trustees of  
County Employees' and Officers' Annuity  
and Benefit Fund of Cook County

### *Report on the Financial Statements*

We have audited the accompanying financial statements of County Employees' and Officers' Annuity and Benefit Fund of Cook County (the Plan), a fiduciary fund of Cook County, Illinois, which comprise the combining statements of pension plan fiduciary net position and postemployment healthcare plan net position as of December 31, 2017 and 2016, and the related combining statements of changes in pension plan fiduciary net position and postemployment healthcare plan net position for the years then ended, and the related notes to the financial statements, which collectively comprise the Plan's basic financial statements.

### *Management's Responsibility for the Financial Statements*

Management is responsible for the preparation and fair presentation of these financial statements in accordance with accounting principles generally accepted in the United States of America; this includes the design, implementation, and maintenance of internal control relevant to the preparation and fair presentation of financial statements that are free from material misstatement, whether due to fraud or error.

### *Auditors' Responsibility*

Our responsibility is to express an opinion on these financial statements based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the financial statements are free of material misstatement.

An audit includes performing procedures to obtain audit evidence about the amounts and disclosures in the financial statements. The procedures selected depend on the auditor's judgment, including the assessment of the risks of material misstatement of the financial statements, whether due to fraud or error. In making those risk assessments, the auditor considers internal control relevant to the Plan's preparation and fair presentation of the financial statements in order to design audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of the Plan's internal control. Accordingly, we express no such opinion. An audit also includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements. An audit also includes evaluating the appropriateness of accounting policies used and the reasonableness of significant accounting estimates made by management, as well as evaluating the overall presentation of financial statements.

We believe that the audit evidence we have obtained is sufficient and appropriate to provide a basis for our audit opinion.

***Opinion***

In our opinion, the financial statements referred to in the first paragraph present fairly, in all material respects, the plan net position of County Employees' and Officers' Annuity and Benefit Fund of Cook County as of December 31, 2017 and 2016, and the changes in plan net position for the years then ended, in conformity with accounting principles generally accepted in the United States of America.

***Emphasis of Matter***

As discussed in Note 1, the Plan implemented GASB Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*. As a result, the financial statements now include substantially different note disclosures and required supplementary information. Our opinion is not modified with respect to this matter.

***Other Matters******Required Supplementary Information***

Accounting principles generally accepted in the United States of America require that the Management's Discussion and Analysis and the required supplementary information, consisting of the schedule of changes in the employer's net pension liability and related ratios, schedule of employer contributions and related notes, schedule of investment returns, schedule of changes in the employer's net postemployment healthcare liability and related ratios, and schedule of employer contributions and related notes, be presented to supplement the basic financial statements. Such information, although not a part of the basic financial statements, is required by the Governmental Accounting Standards Board, who considers it to be an essential part of financial reporting for placing the basic financial statements in an appropriate operational, economic or historical context. We have applied certain limited procedures to the required supplementary information in accordance with auditing standards generally accepted in the United States of America, which consisted of inquires of management about the methods of preparing the information and comparing the information for consistency with management's responses to our inquiries, the basic financial statements, and other knowledge we obtained during our audit of the basic financial statements. We do not express an opinion or provide any assurance on the information because the limited procedures do not provide us with sufficient evidence to express an opinion or provide any assurance.

***Supplementary Information***

Our audits were conducted for the purpose of forming an opinion on the Plan's basic financial statements as a whole. The accompanying supplementary information, consisting of the schedules of net administrative expenses and professional and consulting fees, schedules of investment expenses, additions by source, deductions by type and schedule of employer contributions receivable, is presented for purposes of additional analysis and is not a required part of the basic financial statements. Such information is the responsibility of management and was derived from and relates directly to the underlying accounting and other records used to prepare the basic financial statements. Such information has been subjected to the auditing procedures applied in the audits of the basic financial statements and certain additional procedures, including comparing and reconciling such information directly to the underlying accounting and other records used to prepare the basic financial statements or to the financial statements themselves, and other additional procedures in accordance with auditing standards generally accepted in the United States of America. In our opinion, the information is fairly stated in all material respects in relation to the basic financial statements as a whole.

## FINANCIAL SECTION

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### Report of Independent Auditors (continued)

#### *Other Matters (continued)*

##### *Previously Audited Information*

We also have previously audited the basic financial statements for the years ended December 31, 2015, 2014, 2013, and 2012 (which are not presented herein), and we expressed unmodified opinions on those financial statements. In our opinion, the previously audited information presented on the additions by source and deductions by type is fairly stated in all material respects in relation to the basic financial statements from which it has been derived.

*Legacy Professionals LLP*

Westchester, Illinois

June 14, 2018

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# Management's Discussion and Analysis (Unaudited)

This section presents Management's Discussion and Analysis of the financial position and performance of the County Employees' and Officers' Annuity and Benefit Fund of Cook County (the Plan) for the years ended December 31, 2017 and 2016. This discussion is presented as an overview of the financial activities of the Plan and should be read in conjunction with the Plan's financial statements.

## Overview of the Basic Financial Statements

The following discussion and analysis is intended to serve as an introduction to the Plan's basic financial statements. The financial statements are prepared on an economic sources focus and accrual basis of accounting in accordance with Governmental Accounting Standards Board (GASB) pronouncements. The basic components of the financial package are described below:

**Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position** a snapshot of account balances and net position held in trust for future benefit payments and any liabilities as of the Plan's year end. Over time increases and decreases in net position may serve as a useful indicator of whether the financial position of the Plan is improving or deteriorating.

**Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position** shows the revenues (additions) and expenses (deductions) during the year, where additions less deductions equal net increase (decrease) in net position. The net increase (decrease) in net position reports the change in net position as reported in the combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position of the prior year and the current year.

**Notes to the Financial Statements** provides additional information that is essential to achieving a better understanding of the data provided in the basic financial statements.

**Required Supplementary Information** provides schedules and related notes concerning actuarial information, funding progress, employer contributions and investment returns.

**Supplementary Information** includes schedules of net administrative expenses, professional and consulting fees, investment expenses, additions by source, deductions by type and employer contributions receivable.

## Financial Highlights

**Net position** increased by \$1,292,225,573 or 14.2% from \$9,115,657,870 at December 31, 2016 to \$10,407,883,443 at December 31, 2017. Comparatively, net position increased by \$472,613,595 or 5.5% from \$8,643,044,275 at December 31, 2015 to \$9,115,657,870 at December 31, 2016. The increase in net position for 2017 was primarily due to the increase in the fair value of investments. The increase in net position for 2016 was primarily due to the increase in the fair value of investments and supplemental employer contributions from Cook County, Illinois of \$270,526,000.

The **rate of return** of the Plan's investment portfolio was 15.35% for 2017, 7.67% for 2016 and -0.10% for 2015.



## Plan Net Position

The condensed Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position reflects the resources available to pay benefits to members. A summary of the Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Plan Net Position is as follows:

|                   | Plan Net Position as of December 31, |                         |                         | Current Year Increase in |                |
|-------------------|--------------------------------------|-------------------------|-------------------------|--------------------------|----------------|
|                   | <u>2017</u>                          | <u>2016</u>             | <u>2015</u>             | <u>Dollars</u>           | <u>Percent</u> |
| Total assets      | \$ 11,764,697,724                    | \$10,407,279,006        | \$9,901,259,891         | \$1,357,418,718          | 13.0%          |
| Total liabilities | 1,356,814,281                        | 1,291,621,136           | 1,258,215,616           | 65,193,145               | 5.0%           |
| Net position      | <u>\$ 10,407,883,443</u>             | <u>\$ 9,115,657,870</u> | <u>\$ 8,643,044,275</u> | <u>\$1,292,225,573</u>   | 14.2%          |

## Changes in Plan Net Position

The condensed Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position reflects the changes in the resources available to pay benefits to members. A summary of the Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position is as follows:

|  | Changes in Plan Net Position for the Years Ended December 31, |                        |                        | Current Year Increase/(Decrease) in |                |
|--|---|------------------------|------------------------|-------------------------------------|----------------|
|  | <u>2017</u>   | <u>2016</u>            | <u>2015</u>            | <u>Dollars</u>                      | <u>Percent</u> |
| <b>Additions</b>   |   |                        |                        |                                     |                |
| Employer contributions   | \$ 559,205,626  | \$ 464,268,404         | \$ 186,832,321         | \$ 94,937,222                       | 20.4%          |
| Employee contributions   | 138,826,184   | 139,355,592            | 137,707,719            | (529,408)                           | -0.4%          |
| Investment income (loss)<br>(includes securities lending activities) | 1,399,625,874   | 629,442,470            | (21,896,696)           | 770,183,404                         | 122.4%         |
| Other  | 23,321,813  | 14,019,340             | 11,457,843             | 9,302,473                           | 66.4%          |
| Total additions  | <u>2,120,979,497</u>  | <u>1,247,085,806</u>   | <u>314,101,187</u>     | <u>873,893,691</u>                  | 70.1%          |
| <b>Deductions</b>  |   |                        |                        |                                     |                |
| Benefits   | 790,352,526   | 742,396,434            | 701,031,411            | 47,956,092                          | 6.5%           |
| Refunds  | 32,995,364  | 26,702,222             | 33,273,171             | 6,293,142                           | 23.6%          |
| Administrative expenses  | 5,406,034   | 5,373,555              | 5,151,110              | 32,479                              | 0.6%           |
| Total deductions   | <u>828,753,924</u>  | <u>774,472,211</u>     | <u>739,455,692</u>     | <u>54,281,713</u>                   | 7.0%           |
| Net increase (decrease)  | 1,292,225,573   | 472,613,595            | (425,354,505)          | 819,611,978                         | 173.4%         |
| <b>Net position</b>  |   |                        |                        |                                     |                |
| Beginning of year  | 9,115,657,870   | 8,643,044,275          | 9,068,398,780          | 472,613,595                         | 5.5%           |
| End of year  | <u>\$10,407,883,443</u>                                       | <u>\$9,115,657,870</u> | <u>\$8,643,044,275</u> | <u>\$1,292,225,573</u>              | 14.2%          |

## FINANCIAL SECTION

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### Management's Discussion and Analysis (continued)

#### Additions to Plan Net Position

Total additions were \$2,120,979,497 in 2017, \$1,247,085,806 in 2016 and \$314,101,187 in 2015.

Employer contributions increased to \$559,205,626 in 2017 from \$464,268,404 in 2016 and increased from \$186,832,321 in 2015. Employer contributions are statutorily set at 1.54 times employee contributions collected two years prior. The County made supplemental contributions of \$353,800,000 and \$270,526,000 during 2017 and 2016, respectively.

Employee contributions, including permissive service credit purchases, decreased to \$138,826,184 in 2017 from \$139,355,592 in 2016 and increased from \$137,707,719 in 2015. The majority of members contribute 8.5% of covered wages.

Net investment income totaled \$1,399,625,874 for 2017 compared to income of \$629,442,470 for 2016 and (loss) of (\$21,896,696) for 2015. Investment earnings fluctuate primarily from the overall performance of the financial markets from year to year.

#### Deductions to Plan Net Position

Total deductions were \$828,753,924 in 2017, \$774,472,211 in 2016 and were \$739,455,692 in 2015.

Benefits increased to \$790,352,526 in 2017 from \$742,396,434 in 2016 and \$701,031,411 in 2015 due primarily to the 3% annual cost of living increases for annuitants and an increase in the number of retirees.

Refunds increased to \$32,995,364 in 2017 from \$26,702,222 in 2016 and decreased from \$33,273,171 in 2015. These changes are due to fluctuations in refund applications.

The cost to administer the Plan increased by 0.6% to \$5,406,034 in 2017 from \$5,373,555 in 2016. Comparatively, the cost to administer the Plan increased by 4.3% to \$5,373,555 in 2016 from \$5,151,110 in 2015.

## Actuarial Information

### Pension Benefits

Under GASB Statement No. 67, *Financial Reporting for Pension Plans*, the Plan's funding for pension benefits is as follows:

|   | <b>Funding for Pension Benefits</b>     |                         |                         |
|---|---|-------------------------|-------------------------|
|   | <b>For the Years Ended December 31,</b> |                         |                         |
|   | <b><u>2017</u></b>                      | <b><u>2016</u></b>      | <b><u>2015</u></b>      |
| Total pension liability   | \$22,940,794,624                        | \$23,240,192,010        | \$23,963,085,690        |
| Plan fiduciary net position   | <u>10,407,883,443</u>                   | <u>9,115,657,870</u>    | <u>8,643,044,275</u>    |
| Employer's net pension liability  | <u>\$12,532,911,181</u>                 | <u>\$14,124,534,140</u> | <u>\$15,320,041,415</u> |
| Plan fiduciary net position as a percentage<br>of the total pension liability | <u>45.37%</u>                           | <u>39.22%</u>           | <u>36.07%</u>           |

### Postemployment Healthcare Benefits

Under GASB Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans*, the Plan's funding for postemployment healthcare benefits is as follows:

|   | <b>Funding for Postemployment Healthcare Benefits</b> |                        |                    |
|---|---|------------------------|--------------------|
|   | <b>For the Years Ended December 31,</b>               |                        |                    |
|   | <b><u>2017</u></b>                                    | <b><u>2016</u></b>     | <b><u>2015</u></b> |
| Total other postemployment benefits liability             | \$2,148,249,441                                       | \$2,229,886,669        | N/A *              |
| Plan fiduciary net position                               | -   | -                      |                    |
| Employer's net other<br>postemployment benefits liability | <u>\$2,148,249,441</u>                                | <u>\$2,229,886,669</u> |                    |

Contributions for postemployment healthcare benefits are made on a "pay-as-you-go" basis, resulting in a 0.00% funded ratio.

\* These amounts are unavailable as of December 31, 2015.

## FINANCIAL SECTION

### Management's Discussion and Analysis (continued)

#### Actuarial Information (continued)

##### Combined

The Plan actuary has performed a combined valuation of the pension and postemployment healthcare benefits provided by the Plan to measure the overall funded status and contribution requirements of the Plan. Such a valuation is required under Chapter 40, Article 5/9-199 of the Illinois Pension Code which provides that the Plan shall submit a report each year containing a detailed statement of the affairs of the Plan, its income and expenditures, and assets and liabilities. The combined valuation reflects the actuarial assumptions adopted by the Board based on the results of an actuarial experience study. These assumptions conform to the actuarial standards recommended by the Plan's actuary and were used by the Plan's actuary to present the combined funding status in accordance with *Section 9-199*. The Plan's funding under the combined actuarial valuation is as follows:

|                                      | <b>Funding for Combined Pension<br/>and Postemployment Healthcare Benefits<br/>For the Years Ended December 31,</b> |                         |                         |
|--------------------------------------|---|-------------------------|-------------------------|
|                                      | <b><u>2017</u></b>  | <b><u>2016</u></b>      | <b><u>2015</u></b>      |
| Unfunded actuarial accrued liability | <u>\$ 6,741,295,828</u>   | <u>\$ 7,238,233,759</u> | <u>\$ 7,241,166,616</u> |
| Funded ratio                         | <u>60.09%</u>   | <u>56.73%</u>           | <u>55.39%</u>           |

#### Contact Information

This financial report is designed to provide the employer, plan participants and others with a general overview of the Plan's finances and show accountability for money it receives. Questions concerning any data provided in the report or requests for additional information should be addressed to:

County Employees' and Officers' Annuity  
and Benefit Fund of Cook County  
Attention: Executive Director  
70 West Madison Street  
Suite 1925  
Chicago, Illinois 60602

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# Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position

December 31, 2017

| <u>ASSETS</u>   | <u>Total</u>            | <u>Pension</u>          | <u>Postemployment<br/>Healthcare</u> |
|---|-------------------------|-------------------------|--------------------------------------|
| Receivables   |                         |                         |                                      |
| Employer contributions less allowance of<br>\$6,501,930 in 2017                         | \$221,777,241           | \$219,087,037           | \$2,690,204                          |
| Employee contributions  | 6,313,252               | 6,313,252               | -                                    |
| Accrued investment income   | 22,764,522              | 22,764,522              | -                                    |
| Receivable for securities sold  | 42,988,417              | 42,988,417              | -                                    |
| Due from Forest Preserve District Employees' Annuity<br>and Benefit Fund of Cook County | 359,334                 | 359,334                 | -                                    |
| EGWP/Medicare Part D subsidy  | 3,416,852               | -                       | 3,416,852                            |
| Prescription Rebates  | 2,066,366               | -                       | 2,066,366                            |
| Other   | 46,069                  | 46,069                  | -                                    |
| Total receivables   | <u>299,732,053</u>      | <u>291,558,631</u>      | <u>8,173,422</u>                     |
| Investments   |                         |                         |                                      |
| U.S. and international equities   | 5,840,815,927           | 5,840,815,927           | -                                    |
| U.S. Government and government agency obligations                                       | 1,042,879,014           | 1,042,879,014           | -                                    |
| Corporate and foreign government obligations  | 892,437,094             | 892,437,094             | -                                    |
| Collective international equity fund  | 77,439,593              | 77,439,593              | -                                    |
| Commingled fixed income fund  | 28,067,670              | 28,067,670              | -                                    |
| Private global fixed fund limited partnership   | 214,787,328             | 214,787,328             | -                                    |
| Exchange traded funds   | 172,932,810             | 172,932,810             | -                                    |
| Private equities  | 393,324,331             | 393,324,331             | -                                    |
| Hedge funds   | 661,759,083             | 661,759,083             | -                                    |
| Real estate funds   | 625,399,268             | 625,399,268             | -                                    |
| Short-term investments  | 296,147,796             | 296,147,796             | -                                    |
| Total investments   | <u>10,245,989,914</u>   | <u>10,245,989,914</u>   | <u>-</u>                             |
| Collateral held for securities on loan  | 1,218,975,757           | 1,218,975,757           | -                                    |
| Total assets  | <u>11,764,697,724</u>   | <u>11,756,524,302</u>   | <u>8,173,422</u>                     |
| <b><u>LIABILITIES</u></b>   |                         |                         |                                      |
| Accounts payable  | 7,103,244               | 7,103,244               | -                                    |
| Healthcare benefits payable   | 8,173,422               | -                       | 8,173,422                            |
| Payable for securities purchased  | 122,561,858             | 122,561,858             | -                                    |
| Securities lending collateral   | 1,218,975,757           | 1,218,975,757           | -                                    |
| Total liabilities   | <u>1,356,814,281</u>    | <u>1,348,640,859</u>    | <u>8,173,422</u>                     |
| Net position  |                         |                         |                                      |
| Net position restricted for pensions  | 10,407,883,443          | 10,407,883,443          | -                                    |
| Net position held in trust for<br>postemployment healthcare benefits                    | -                       | -                       | -                                    |
| Total   | <u>\$10,407,883,443</u> | <u>\$10,407,883,443</u> | <u>\$ -</u>                          |

**Combining Statements of Pension Plan Fiduciary Net Position and Postemployment Healthcare  
Plan Net Position (continued)**

**December 31, 2016**

| <u>ASSETS</u>   | <u>Total</u>           | <u>Pension</u>         | <u>Postemployment<br/>Healthcare</u> |
|---|------------------------|------------------------|--------------------------------------|
| Receivables   |                        |                        |                                      |
| Employer contributions less allowance of<br>\$6,791,899 in 2016                         | \$ 206,231,500         | \$ 198,037,968         | \$ 8,193,532                         |
| Employee contributions  | 7,556,328              | 7,556,328              | -                                    |
| Accrued investment income   | 20,362,677             | 20,362,677             | -                                    |
| Receivable for securities sold  | 97,101,028             | 97,101,028             | -                                    |
| Due from Forest Preserve District Employees' Annuity<br>and Benefit Fund of Cook County | 463,181                | 463,181                | -                                    |
| EGWP/Medicare Part D subsidy  | 883,525                | -                      | 883,525                              |
| Prescription Rebates  | 1,448,805              | -                      | 1,448,805                            |
| Other   | 37,823                 | 37,823                 | -                                    |
| Total receivables   | <u>334,084,867</u>     | <u>323,559,005</u>     | <u>10,525,862</u>                    |
| Investments   |                        |                        |                                      |
| U.S. and international equities   | 4,264,200,142          | 4,264,200,142          | -                                    |
| U.S. Government and government agency obligations                                       | 1,026,986,177          | 1,026,986,177          | -                                    |
| Corporate bonds   | 822,348,141            | 822,348,141            | -                                    |
| Collective international equity fund  | 67,885,886             | 67,885,886             | -                                    |
| Commingled fixed income fund  | 26,821,800             | 26,821,800             | -                                    |
| Private global fixed fund limited partnership   | 206,118,267            | 206,118,267            | -                                    |
| Exchange traded funds   | 483,639,898            | 483,639,898            | -                                    |
| Private equities  | 267,153,632            | 267,153,632            | -                                    |
| Hedge funds   | 634,093,947            | 634,093,947            | -                                    |
| Real estate funds   | 597,613,560            | 597,613,560            | -                                    |
| Short-term investments  | 602,067,528            | 602,067,528            | -                                    |
| Total investments   | <u>8,998,928,978</u>   | <u>8,998,928,978</u>   | <u>-</u>                             |
| Collateral held for securities on loan  | 1,074,265,161          | 1,074,265,161          | -                                    |
| Total assets  | <u>10,407,279,006</u>  | <u>10,396,753,144</u>  | <u>10,525,862</u>                    |
| <br><u>LIABILITIES</u>  |                        |                        |                                      |
| Accounts payable  | 6,092,219              | 6,092,219              | -                                    |
| Healthcare insurance payable  | 10,525,862             | -                      | 10,525,862                           |
| Payable for securities purchased  | 200,737,894            | 200,737,894            | -                                    |
| Securities lending collateral   | 1,074,265,161          | 1,074,265,161          | -                                    |
| Total liabilities   | <u>1,291,621,136</u>   | <u>1,281,095,274</u>   | <u>10,525,862</u>                    |
| Net position  |                        |                        |                                      |
| Net position restricted for pensions  | 9,115,657,870          | 9,115,657,870          | -                                    |
| Net position held in trust for<br>postemployment healthcare benefits                    | -                      | -                      | -                                    |
| Total   | <u>\$9,115,657,870</u> | <u>\$9,115,657,870</u> | <u>\$ -</u>                          |

## Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position

Year Ended December 31, 2017

|   | <u>Total</u>         | <u>Pension</u>       | <u>Postemployment<br/>Healthcare</u> |
|---|----------------------|----------------------|--------------------------------------|
| <b>Additions</b>                                      |                      |                      |                                      |
| Employer contributions                                |                      |                      |                                      |
| Statutory   | \$ 205,405,626       | \$ 157,950,985       | \$ 47,454,641                        |
| Supplemental  | 353,800,000          | 353,800,000          | -                                    |
| Total employer contributions                          | <u>559,205,626</u>   | <u>511,750,985</u>   | <u>47,454,641</u>                    |
| Employee contributions                                |                      |                      |                                      |
| Salary deductions                                     | 133,373,644          | 133,373,644          | -                                    |
| Refund repayments                                     | 2,688,177            | 2,688,177            | -                                    |
| Former and miscellaneous service payments             | 701,554              | 701,554              | -                                    |
| Optional payments and deductions                      | 36,687               | 36,687               | -                                    |
| Deductions in lieu of disability                      | 2,026,122            | 2,026,122            | -                                    |
| Total employee contributions                          | <u>138,826,184</u>   | <u>138,826,184</u>   | <u>-</u>                             |
| Investment income                                     |                      |                      |                                      |
| Net appreciation in<br>fair value of investments      | 1,248,856,354        | 1,248,856,354        | -                                    |
| Dividends   | 114,586,784          | 114,586,784          | -                                    |
| Interest  | 66,512,771           | 66,512,771           | -                                    |
|   | 1,429,955,909        | 1,429,955,909        | -                                    |
| Less investment expenses                              | (35,232,027)         | (35,232,027)         | -                                    |
| Net investment income                                 | <u>1,394,723,882</u> | <u>1,394,723,882</u> | <u>-</u>                             |
| Securities lending                                    |                      |                      |                                      |
| Income  | 5,817,943            | 5,817,943            | -                                    |
| Expenses  | (915,951)            | (915,951)            | -                                    |
| Net securities lending income                         | <u>4,901,992</u>     | <u>4,901,992</u>     | <u>-</u>                             |
| Other   |                      |                      |                                      |
| Employer federal subsidized programs                  | 4,296,563            | 4,296,563            | -                                    |
| EGWP/Medicare Part D subsidy                          | 10,398,481           | -                    | 10,398,481                           |
| Prescription plan rebates                             | 7,563,914            | -                    | 7,563,914                            |
| Employee transfers (to) from Forest Preserve District |                      |                      |                                      |
| Employees' Annuity and Benefit Fund of Cook County    | 54,257               | 54,257               | -                                    |
| Miscellaneous   | 1,008,598            | 1,008,598            | -                                    |
| Total other additions                                 | <u>23,321,813</u>    | <u>5,359,418</u>     | <u>17,962,395</u>                    |
| Total additions                                       | <u>2,120,979,497</u> | <u>2,055,562,461</u> | <u>65,417,036</u>                    |

See accompanying notes to combining financial statements.



**Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position (continued)**

**Year Ended December 31, 2016**

|   | <u>Total</u>         | <u>Pension</u>       | <u>Postemployment<br/>Healthcare</u> |
|---|----------------------|----------------------|--------------------------------------|
| <b>Additions</b>                                      |                      |                      |                                      |
| Employer contributions                                |                      |                      |                                      |
| Statutory   | \$ 193,742,404       | \$ 144,177,155       | \$ 49,565,249                        |
| Supplemental  | 270,526,000          | 270,526,000          | -                                    |
| Total employer contributions                          | <u>464,268,404</u>   | <u>414,703,155</u>   | <u>49,565,249</u>                    |
| Employee contributions                                |                      |                      |                                      |
| Salary deductions                                     | 134,282,029          | 134,282,029          | -                                    |
| Refund repayments                                     | 2,569,240            | 2,569,240            | -                                    |
| Former and miscellaneous service payments             | 584,376              | 584,376              | -                                    |
| Optional payments and deductions                      | 38,314               | 38,314               | -                                    |
| Deductions in lieu of disability                      | 1,881,633            | 1,881,633            | -                                    |
| Total employee contributions                          | <u>139,355,592</u>   | <u>139,355,592</u>   | <u>-</u>                             |
| Investment income                                     |                      |                      |                                      |
| Net appreciation in<br>fair value of investments      | 484,767,317          | 484,767,317          | -                                    |
| Dividends   | 107,959,948          | 107,959,948          | -                                    |
| Interest  | 64,033,120           | 64,033,120           | -                                    |
|   | <u>656,760,385</u>   | <u>656,760,385</u>   | <u>-</u>                             |
| Less investment expenses                              | (32,912,681)         | (32,912,681)         | -                                    |
| Net investment income                                 | <u>623,847,704</u>   | <u>623,847,704</u>   | <u>-</u>                             |
| Securities lending                                    |                      |                      |                                      |
| Income  | 6,717,119            | 6,717,119            | -                                    |
| Expenses  | (1,122,353)          | (1,122,353)          | -                                    |
| Net securities lending income                         | <u>5,594,766</u>     | <u>5,594,766</u>     | <u>-</u>                             |
| Other   |                      |                      |                                      |
| Employer federal subsidized programs                  | 3,162,532            | 3,162,532            | -                                    |
| EGWP/Medicare Part D subsidy                          | 4,090,789            | -                    | 4,090,789                            |
| Prescription plan rebates                             | 5,882,393            | -                    | 5,882,393                            |
| Employee transfers (to) from Forest Preserve District |                      |                      |                                      |
| Employees' Annuity and Benefit Fund of Cook County    | 133,999              | 133,999              | -                                    |
| Miscellaneous   | 749,627              | 749,627              | -                                    |
| Total other additions                                 | <u>14,019,340</u>    | <u>4,046,158</u>     | <u>9,973,182</u>                     |
| Total additions                                       | <u>1,247,085,806</u> | <u>1,187,547,375</u> | <u>59,538,431</u>                    |

*See accompanying notes to combining financial statements.*

**FINANCIAL SECTION**

**Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position (continued)**

**Year Ended December 31, 2017**

|  | <u>Total</u>                   | <u>Pension</u>                 | <u>Postemployment<br/>Healthcare</u> |
|--|--------------------------------|--------------------------------|--------------------------------------|
| Deductions   |                                |                                |                                      |
| Benefits   |                                |                                |                                      |
| Annuity  |                                |                                |                                      |
| Employee   | \$ 661,594,080                 | \$ 661,594,080                 | \$ -                                 |
| Spouse and children  | 51,874,102                     | 51,874,102                     | -                                    |
| Disability   |                                |                                |                                      |
| Ordinary   | 10,875,990                     | 10,875,990                     | -                                    |
| Duty   | 591,318                        | 591,318                        | -                                    |
| Healthcare less annuitant contributions of<br>\$46,679,437 on 2017 | 65,417,036                     | -                              | 65,417,036                           |
| Total benefits   | <u>790,352,526</u>             | <u>724,935,490</u>             | <u>65,417,036</u>                    |
| Refunds  | 32,995,364                     | 32,995,364                     | -                                    |
| Net administrative expenses  | 5,406,034                      | 5,406,034                      | -                                    |
| Total deductions   | <u>828,753,924</u>             | <u>763,336,888</u>             | <u>65,417,036</u>                    |
| Net increase   | 1,292,225,573                  | 1,292,225,573                  | -                                    |
| Net position   |                                |                                |                                      |
| Beginning of year  | <u>9,115,657,870</u>           | <u>9,115,657,870</u>           | -                                    |
| End of year  | <u><u>\$10,407,883,443</u></u> | <u><u>\$10,407,883,443</u></u> | <u><u>\$ -</u></u>                   |

**Combining Statements of Changes in Pension Plan Fiduciary Net Position and Postemployment Healthcare Plan Net Position (continued)**

**Year Ended December 31, 2016**

|  | <u>Total</u>           | <u>Pension</u>         | <u>Postemployment<br/>Healthcare</u> |
|--|------------------------|------------------------|--------------------------------------|
| Deductions   |                        |                        |                                      |
| Benefits   |                        |                        |                                      |
| Annuity  |                        |                        |                                      |
| Employee   | \$ 624,231,419         | \$ 624,231,419         | \$ -                                 |
| Spouse and children  | 47,919,324             | 47,919,324             | -                                    |
| Disability   |                        |                        |                                      |
| Ordinary   | 10,160,688             | 10,160,688             | -                                    |
| Duty   | 546,572                | 546,572                | -                                    |
| Healthcare less annuitant contributions of<br>\$41,650,333 on 2016 | 59,538,431             | -                      | 59,538,431                           |
| Total benefits   | <u>742,396,434</u>     | <u>682,858,003</u>     | <u>59,538,431</u>                    |
| Refunds  | 26,702,222             | 26,702,222             | -                                    |
| Net administrative expenses  | 5,373,555              | 5,373,555              | -                                    |
| Total deductions   | <u>774,472,211</u>     | <u>714,933,780</u>     | <u>59,538,431</u>                    |
| Net increase (decrease)  | 472,613,595            | 472,613,595            | -                                    |
| Net position   |                        |                        |                                      |
| Beginning of year  | <u>8,643,044,275</u>   | <u>8,643,044,275</u>   | -                                    |
| End of year  | <u>\$9,115,657,870</u> | <u>\$9,115,657,870</u> | <u>\$ -</u>                          |

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# Notes to Financial Statements

## Note 1: Summary of Significant Accounting Policies

The County Employees' and Officers' Annuity and Benefit Fund of Cook County (the Plan) is administered in accordance with Chapter 40, Article 5/9 of the Illinois Compiled Statutes (the Statutes).

**Financial Reporting Entity** - Accounting principles generally accepted in the United States of America define a financial reporting entity as consisting of the primary government and its component units for which the primary government is financially accountable. Financial accountability includes appointing a voting majority of a component unit's governing board, the ability of a primary government to impose its will on the component unit, or a potential for a component unit to provide specific financial benefits to or impose specific financial burdens on the primary government. The Plan has determined that no other outside entity meets the above criteria and, therefore, no other entity has been included as a component unit in the Plan's financial statements.

Based on the above criteria, the Plan is considered to be a fiduciary fund of Cook County, Illinois (the County) and is included in the County's financial statements.

**New Accounting Pronouncement** - The Plan has implemented Governmental Accounting Standards Board (GASB) Statement No. 74, *Financial Reporting for Postemployment Benefit Plans Other Than Pension Plans* (GASB 74), which addresses accounting and financial reporting issues related to other postemployment benefit plans. GASB 74 requires more extensive note disclosures and required supplementary information related to the measurement of the other postemployment benefit liabilities for which assets have been accumulated, including information about the annual money-weighted rates of return on plan investments.

The Plan has also implemented GASB Statement No. 82, *Pension Issues – an amendment of GASB Statements No. 67, No. 68 and No. 73* (GASB 82), which addresses issues regarding (1) the presentation of payroll-related measures in required supplementary information, (2) the selection of assumptions and the treatment of deviations from the guidance in an Actuarial Standard of Practice for financial reporting purposes, and (3) the classification of payments made by employers to satisfy employee (plan member) contribution requirements.

**Method of Accounting** - The financial statements are prepared using the accrual basis of accounting. Employer contributions are recognized as income pursuant to legal requirements as specified by the Illinois Compiled Statutes. Employee contributions are recognized in the period in which the contributions are due. Benefits and refunds are recognized when due and payable in accordance with the terms of the Plan.

**Investments** - Investments are reported at fair value, which generally represents reported market value as of the last business day of the year. Where less than an entire investment holding is sold, average value is used to determine realized gain or loss.

**Allocated Expenses** - Administrative expenses are initially paid by the Plan. These expenses are allocated between the Plan and the Forest Preserve District Employees' Annuity and Benefit Fund of Cook County (the Forest Fund) on a pro rata basis, as applicable.

**Capital Assets** - The Plan has set a capitalization threshold of \$100,000 for all capital asset types. As of December 31, 2017 and 2016, the Plan does not have any capital assets.

**Estimates** - The preparation of the financial statements in conformity with generally accepted accounting principles requires management to make estimates and assumptions that affect certain reported amounts and disclosures in the financial statements. Actual results could differ from those estimates.

**Reclassifications** - Certain prior year amounts have been reclassified to conform to the current year presentation.

**Subsequent Events** - Subsequent events have been evaluated through June 12, 2017, which is the date the financial statements were available to be issued.

## Note 2: Plan Description

The Plan was established on January 1, 1926, and is governed by legislation contained in the Illinois Compiled Statutes (the Statutes), particularly Chapter 40, Article 5/9 (the Article). Effective with the signing of Public Act 96-0889 into law on April 14, 2010, participants that first became contributors on or after January 1, 2011 are Tier 2 participants. All other participants that were contributing prior to January 1, 2011 are Tier 1 participants. The Plan can be amended only by the Illinois Legislature. The Plan is a single employer defined benefit pension plan with a defined contribution minimum. The Plan was established for the purpose of providing retirement, death and disability benefits for full-time employees of the County and the dependents of such employees. The Plan is considered to be a fiduciary fund of Cook County, Illinois and is included in the County's financial statements.

The Statutes authorize a Board of Trustees (the Board) of nine members to carry out the provisions of the Article. According to the Article, two members of the Board are ex officio, four are elected by the employee members of the Plan and three are elected by the annuitants of the Plan. The two ex officio members are the Comptroller of Cook County, or someone chosen by the Comptroller, and the Treasurer of Cook County, or someone chosen by the Treasurer. All members of the Board are fiduciaries with respect to the Plan and are statutorily mandated to discharge their duties, as such, solely in the interest of the Plan's participants and beneficiaries.

The Board has the powers and duties required in the Article to collect all contributions due to the Plan, to invest the Plan's reserves, to have an annual audit, to appoint employees, to authorize or suspend payment of any benefit and to have exclusive original jurisdiction in all matters relating to or affecting the Plan. The Board approves its own budget which is prepared by the administrative staff of the Plan. The Board is required annually to submit to the County Board of Cook County a detailed report of the financial affairs and status of the Plan. Provisions in other articles of Chapter 40 require the Board to submit its annual audit and actuarial valuation reports to the State of Illinois Department of Insurance, as well as another detailed annual report, the form and content of which is specified by the Department of Insurance.

Covered employees are required to contribute 8.5% (9% for sheriffs) of their salary to the Plan, subject to the salary limitations for Tier 2 participants in Article 5/1-160. If an employee leaves covered employment without qualifying for an annuity, accumulated contributions are refunded with interest (3% or 4% depending on when the employee became a participant). The County's total contribution is the amount of contributions made by the employees to the Plan in the calendar year two years prior to the year for which annual applicable tax is levied, multiplied by 1.54. The source of funds for the County's contributions has been designated by State Statute as the County's annual property tax levy. The County's payroll for employees covered by the Plan for the years ended December 31, 2017 and 2016 was \$1,567,480,401 and \$1,580,251,254 respectively.

The Plan provides retirement as well as death and disability benefits. Tier 1 employees age 50 or older and Tier 2 employees age 62 or older are entitled to receive a minimum formula annuity of 2.4% for each year of credited service if they have at least 10 years of service. The maximum benefit is 80% of the final average monthly salary. For Tier 1 employees under age 60 and Tier 2 employees under age 67, the monthly retirement benefit is reduced by ½% for each month the participant is below that age. The reduction is waived for Tier 1 participants having 30 or more years of credited service.

Participants should refer to the applicable State Statutes for more complete information.

## FINANCIAL SECTION

### Notes to Financial Statements (continued)

#### Note 2: Plan Description (continued)

At December 31, 2017 and 2016, participants consisted of the following:

|                  | <u>2017</u>   | <u>2016</u>   |
|------------------|---------------|---------------|
| Active Members   | 20,349        | 20,969        |
| Retired Members  | 15,488        | 15,222        |
| Beneficiaries    | 2,729         | 2,687         |
| Inactive Members | <u>14,624</u> | <u>14,005</u> |
| Total            | <u>53,190</u> | <u>52,883</u> |

#### Note 3: Employer's Pension Liability

##### Net Pension Liability

The components of the employer's net pension liability of the Plan for the years ended December 31, 2017 and 2016 are as follows:

|   | <u>2017</u>             | <u>2016</u>             |
|---|-------------------------|-------------------------|
| Total pension liability   | \$22,940,794,624        | \$23,240,192,010        |
| Plan fiduciary net position   | <u>10,407,883,443</u>   | <u>9,115,657,870</u>    |
| Employer's net pension liability  | <u>\$12,532,911,181</u> | <u>\$14,124,534,140</u> |
| Plan fiduciary net position as a percentage<br>of the total pension liability | <u>45.37%</u>           | <u>39.22%</u>           |

See the schedule of changes in the employer's net pension liability and related ratios in the required supplementary information for additional information related to the funded status of the Plan.

**Note 3: Employers' Pension Liability (continued)**

The net pension liability was determined by actuarial valuations performed as of December 31, 2017 and 2016 using the following actuarial methods and assumptions:

|                                 |  |
|---------------------------------|--|
| Actuarial valuation date        | December 31, 2017 and 2016   |
| Actuarial cost method           | Entry Age Normal   |
| Amortization method             | Level Dollar - Open  |
| Remaining amortization period   | 30 years   |
| Asset valuation method          | Five Year Smoothed Average Market  |
| Actuarial assumptions:          |  |
| Inflation                       | 2017 - 2.75% per year, compounded annually;<br>2016 - 3.25% per year, compounded annually  |
| Salary increases                | 2017 - 1.50% to 7.50%, based on age<br>2016 - 3.75% to 8.00%, based on age   |
| Investment Rate of Return       | 2017 - 7.25% per year, compounded annually;<br>2016 - 7.50% per year, compounded annually  |
| Retirement age                  | 2017 - Rates of retirement for each age from 50 to 80 based on recent experience of the Plan where all employees are assumed to retire by age 80<br>2016 - Rates of retirement for each age from 50 to 75 based on recent experience of the Plan where all employees are assumed to retire by age 75 |
| Mortality                       | 2017 - RP-2014 Blue Collar Mortality Table, base year 2006, Conduent Modified MP-2017 projection scale<br>2016 - RP-2000 Blue Collar Mortality Table, base year 2000, fully generational based on Scale BB   |
| Postretirement annuity increase | Tier 1 participants - 3.0% compounded annually<br>Tier 2 participants - the lesser of 3.0% or one half of the increase in the Consumer Price Index   |

The actuarial assumptions used in the December 31, 2017 valuation were based on the results of an actuarial experience study conducted by Conduent, Inc. (formerly Buck Consultants, LLC) dated February 2018. The actuarial assumptions used in the December 31, 2016 valuation were based on the results of an actuarial experience study conducted by Buck Consultants, LLC dated January 2014.

**Note 3: Employers' Pension Liability (continued)**

**Discount Rate**

The blended discount rates used to measure the total pension liability at December 31, 2017 and 2016 were 4.47% and 4.64%, respectively. The projection of cash flows used to determine the discount rate assumed that the employer's contributions will continue to follow the current funding policy. Based on this assumption, the Plan's fiduciary net position was projected to be insufficient to make all projected future benefit payments of current plan members. Municipal bond rates of 3.16% and 3.71% at December 31, 2017 and 2016, respectively, and the long-term investment rate of returns of 7.25% and 7.50% at December 31, 2017 and 2016, respectively, were used in the development of the blended discount rates. The municipal bond rates are based on the S&P Municipal Bond 20 Year High Grade Rate Index.

**Sensitivity of the Net Pension Liability to Changes in the Discount Rate**

The following is an analysis of the net pension liability's sensitivity to changes in the discount rate at December 31, 2017 and 2016. The following table presents the net pension liability of the employer using the blended discount rate as well as the employer's net pension liability calculated using a discount rate 1 percent lower and 1 percent higher than the current discount rate:

| <b>December 31, 2017</b> |                         |                                      |                         |
|--------------------------|-------------------------|--------------------------------------|-------------------------|
|                          | <b>1% Decrease</b>      | <b>Current<br/>Discount<br/>Rate</b> | <b>1% Increase</b>      |
|                          | 3.47%                   | 4.47%                                | 5.47%                   |
| Net Pension Liability    | <u>\$16,366,617,953</u> | <u>\$12,532,911,181</u>              | <u>\$9,471,482,980</u>  |
| <b>December 31, 2016</b> |                         |                                      |                         |
|                          | <b>1% Decrease</b>      | <b>Current<br/>Discount<br/>Rate</b> | <b>1% Increase</b>      |
|                          | 3.64%                   | 4.64%                                | 5.64%                   |
| Net Pension Liability    | <u>\$18,243,015,037</u> | <u>\$14,124,534,140</u>              | <u>\$10,873,652,859</u> |



**Note 4: Summary of Employer Funding Policies****Statutory Funding**

Employer contributions are funded primarily through a tax levied by Cook County, Illinois. The employer contributions to be remitted to the Plan are equal to the total contributions made by the employees to the Plan in the calendar year two years prior, multiplied by 1.54.

**Supplemental Funding**

During the years ended December 31, 2017 and 2016, the County made supplemental contributions to the Plan totaling \$353,800,000 and \$270,526,000 respectively, to promote the long-term fiscal sustainability of the Plan. These contributions were made pursuant to individual one year Intergovernmental Agreements (IGA) entered into between the County and the Plan.

On January 17, 2018, the County entered into a one year IGA with the Plan to make supplemental contributions to the plan totaling \$353,436,000 to promote the long-term fiscal sustainability of the Plan. The County is expected to pay monthly supplemental contributions beginning on December 31, 2017 through October 31, 2018 in the amount of \$25,000,000 with a final payment of \$78,436,000 on November 30, 2018. Subsequent to year end and through the date of these financial statements, the County has made supplemental contributions totaling \$125,000,000 of the \$353,436,000.

## FINANCIAL SECTION

### Notes to Financial Statements (continued)

#### Note 5: Investments

##### Investment Policy

The Board of Trustees is responsible for establishing reasonable and consistent investment objectives, policies, and guidelines governing the investment of Plan assets in accordance with the Illinois Compiled Statutes. The Plan is authorized to invest in bonds, notes, certificates of indebtedness, mortgage notes, real estate, stocks, shares, debentures, or other obligations or securities as set forth in the “prudent person” provisions of the state statutes. All of the Plan’s financial instruments are consistent with the permissible investments outlined in the state statutes and any index-linked financial instruments are limited to those indices that replicate the permissible investments outlined in the State Statutes. During the year ended December 31, 2017 and 2016, there were no significant changes to the investment policy.

The Plan’s investment policy in accordance with the Illinois Compiled Statutes establishes the following target allocation across asset classes

| <u>Asset Class</u>     | <u>Target<br/>Allocation<br/>%</u> | <u>Long-term<br/>Expected<br/>Rate of Return</u> |
|------------------------|------------------------------------|--|
| Domestic equities      | 33.00%                             | 10.76%   |
| International equities | 21.00%                             | 9.51%  |
| Fixed income           | 26.00%                             | 4.77%  |
| Real estate funds      | 9.00%                              | 8.82%  |
| Private equity         | 4.00%                              | 11.43%   |
| Hedge funds            | 6.00%                              | 7.31%  |
| Short-term investments | 1.00%                              | 3.98%  |
| Total investments      | <u>100.00%</u>                     |  |

##### Long-term expected rate of return

The long-term expected rate of return on the Plan’s investments was determined based on the results of an experience study performed by Conduent, Inc. The results of the experience study were adopted by the Board in April 2018. The investment return assumption was based on the current asset allocation of the Plan. In the experience study, Conduent, Inc. developed best estimate ranges of expected future real rates of return (net of pension plan investment expense and inflation) for each major asset class. These ranges were combined to produce the long-term expected rate of return by weighting the expected future real rates of return by the target asset allocation percentage and by adding expected inflation. Best estimates or arithmetic real rates of return for each major asset class included in the Plan’s target asset allocation as of December 31, 2017 are listed in the table above.

##### Annual Money-Weighted Rate of Return

The annual money-weighted rate of return on pension plan investments, net of pension plan investment expense, was 15.35% and 7.67% for years ended December 31, 2017 and 2016, respectively. The money-weighted rate of return expresses investment performance, net of investment expense, adjusted for the changing amounts actually invested.

**Note 5: Investments (continued)****Credit Risk**

Credit risk is the risk that an issuer or other counterparty to an investment will not fulfill its obligations. The Plan's investment policy is an average credit quality for each manager's total fixed income portfolio (corporate and U.S. Government holdings) of not less than A- by two out of three credit agencies (Moody's Investor Service, Standard & Poor's and/or Fitch). The following table presents a summarization of the Plan's credit quality ratings of investments at December 31, 2017 and 2016 valued by Moody's Investors Service, Standard & Poor's and/or Fitch:

| <u>Type of Investment</u>                            | <u>Rating</u> | <u>2017</u>            | <u>2016</u>            |
|--|---------------|------------------------|------------------------|
| U.S. Government and<br>government agency obligations | Aaa/AAA       | \$ -                   | \$ 172,604             |
|  | Aa/AA         | 969,866,822            | 928,904,735            |
|  | Not Rated     | 73,012,192             | 97,908,838             |
|  |               | <u>\$1,042,879,014</u> | <u>\$1,026,986,177</u> |
| Corporate and foreign<br>government obligations      | Aaa/AAA       | \$ 49,734,614          | \$ 48,506,639          |
|  | Aa/AA         | 43,244,820             | 32,586,006             |
|  | A/A           | 196,619,170            | 165,481,684            |
|  | Baa/BBB       | 399,219,807            | 360,891,419            |
|  | Ba/BB         | 91,257,578             | 114,193,825            |
|  | B/B           | 21,568,391             | 39,430,435             |
|  | Caa/CCC       | 71,256                 | 6,992,198              |
|  | C/C           | -                      | 276,176                |
|  | D/D           | 33,808                 | 347,296                |
|  | Not Rated     | 90,687,650             | 53,642,463             |
|  |               | <u>\$ 892,437,094</u>  | <u>\$ 822,348,141</u>  |
| Commingled fixed income fund                         | Baa/BBB       | <u>\$ 28,067,670</u>   | <u>\$ 26,821,800</u>   |
| Short-term investments                               | Not Rated     | <u>\$ 296,147,796</u>  | <u>\$ 602,067,528</u>  |

## FINANCIAL SECTION

### Notes to Financial Statements (continued)

#### Note 5: Investments (continued)

##### Investment Risk (continued)

###### Interest Rate Risk

Interest rate risk is the risk that changes in interest rates will adversely affect the fair value of an investment. Investments held for longer periods are subject to increased risk of adverse interest rate changes. The Plan's investment policy for duration for each manager's total fixed income portfolio is within plus or minus 30% of the duration for the fixed income performance benchmark (Bloomberg Barclays US Aggregate Fixed Income, which was 5.98 years at December 31, 2017 and 5.89 years at December 31, 2016). The following table presents a summarization of the Plan's debt investments at December 31, 2017 and 2016, using the segmented time distribution method:

| <u>Type of Investment</u>                               | <u>Maturity</u>  | <u>2017</u>            | <u>2016</u>            |
|---|------------------|------------------------|------------------------|
| U.S. Government and<br>government agency<br>obligations | Less than 1 year | \$ 92,827,736          | \$ 41,930,224          |
|   | 1 - 5 years      | 271,124,646            | 260,538,133            |
|   | 6 - 10 years     | 221,211,473            | 199,418,969            |
|   | Over 10 years    | 457,715,159            | 525,098,851            |
|   |                  | <u>\$1,042,879,014</u> | <u>\$1,026,986,177</u> |
| Corporate and foreign<br>government<br>obligations      | Less than 1 year | \$ 94,336,069          | \$ 80,770,194          |
|   | 1 - 5 years      | 248,124,750            | 236,779,236            |
|   | 6 - 10 years     | 295,709,384            | 287,367,978            |
|   | Over 10 years    | 254,266,891            | 217,430,733            |
|   |                  | <u>\$ 892,437,094</u>  | <u>\$ 822,348,141</u>  |
| Commingled fixed<br>income fund                         | 1 - 5 years      | <u>\$ 28,067,670</u>   | <u>\$ 26,821,800</u>   |
| Short-term investments                                  | Less than 1 year | <u>\$ 296,147,796</u>  | <u>\$ 602,067,528</u>  |

**Note 5: Investments (continued)****Investment Risk (continued)****Foreign Currency Risk**

Foreign currency risk is the risk that changes in exchange rates will adversely affect the fair value of an investment or a deposit. The Plan's exposure to foreign currency risk at December 31, 2017 and 2016 is as follows:

| <u>Type of Investment</u>             | <u>Fair Value (USD) 2017</u> | <u>Fair Value (USD) 2016</u> |
|---------------------------------------|------------------------------|------------------------------|
| U.S. and international equities       |                              |                              |
| Australian dollar                     | \$ 67,544,094                | \$ 72,090,036                |
| Brazilian real                        | 34,564,982                   | 22,034,268                   |
| British pound sterling                | 287,406,366                  | 235,875,591                  |
| Canadian dollar                       | 126,857,132                  | 98,136,267                   |
| Chilean peso                          | 2,923,883                    | 2,535,875                    |
| Colombian peso                        | 500,048                      | 471,258                      |
| Czech koruna                          | -                            | 38,001                       |
| Danish krone                          | 25,977,028                   | 24,225,552                   |
| Egyptian pound                        | 198,082                      | 244,466                      |
| European euro                         | 586,137,751                  | 1,023,544                    |
| Hong Kong dollar                      | 152,526,523                  | 14,579,736                   |
| Hungarian forint                      | 1,193,009                    | 6,341,159                    |
| Indian rupee                          | 20,584,222                   | 7,142,608                    |
| Indonesian rupiah                     | 7,985,768                    | 313,922,289                  |
| Israeli shekel                        | 9,049,297                    | 5,038,720                    |
| Japanese yen                          | 409,706,421                  | 8,513,047                    |
| Malaysian ringgit                     | 6,338,639                    | 30,991,207                   |
| Mexican peso                          | 9,944,521                    | 496,551                      |
| New Taiwan dollar                     | 44,440,360                   | 11,400,230                   |
| New Turkish lira                      | 117,984                      | 21,520,393                   |
| New Zealand dollar                    | 12,434,442                   | 6,723,629                    |
| Norwegian krone                       | 18,276,725                   | 3,389,402                    |
| Philippines peso                      | 7,609,358                    | 6,723,629                    |
| Polish zloty                          | 5,990,608                    | 3,389,402                    |
| Russian ruble                         | 496,564                      | 532,753                      |
| Singapore dollar                      | 29,599,310                   | 21,223,544                   |
| South African rand                    | 20,504,292                   | 15,117,538                   |
| South Korean won                      | 61,647,767                   | 43,635,467                   |
| Swedish krona                         | 56,520,490                   | 43,845,594                   |
| Swiss franc                           | 106,330,018                  | 78,901,898                   |
| Thailand baht                         | 9,006,007                    | 8,974,788                    |
| United Arab Emirates dirham           | 1,457,264                    | -                            |
| U.S. dollar                           | 3,716,946,972                | 2,632,354,161                |
| Total U.S. and international equities | <u>\$5,840,815,927</u>       | <u>\$ 4,264,200,142</u>      |

## FINANCIAL SECTION

### Notes to Financial Statements (continued)

#### Note 5: Investments (continued)

##### Investment Risk (continued)

##### Foreign Currency Risk (continued)

| <u>Type of Investment</u>                             | <u>Fair Value (USD)</u><br><u>2017</u> | <u>Fair Value (USD)</u><br><u>2016</u> |
|---|--|--|
| Corporate and foreign government obligations          |  |  |
| British pound sterling                                | \$ -                                   | \$ 874,914                             |
| Canadian dollar                                       | 2,764,885                              | -                                      |
| Mexican peso  | -                                      | 10,956,224                             |
| New Turkish lira                                      | 1,003,130                              | 984,540                                |
| Swedish krona   | -                                      | 1,079,281                              |
| U.S. dollar   | 888,669,079                            | 808,453,182                            |
| Total corporate and<br>foreign government obligations | <u>\$892,437,094</u>                   | <u>\$822,348,141</u>                   |
| Private equities                                      |  |  |
| European euro   | \$ 21,420,498                          | \$ 10,868,687                          |
| U.S. dollar   | 371,903,833                            | 256,284,945                            |
| Total private equities                                | <u>\$393,324,331</u>                   | <u>\$ 267,153,632</u>                  |

For the years ended December 31, 2017 and 2016, net realized gain on investments sold, reflecting the difference between the proceeds received and cost value of securities sold, was \$545,849,687 and \$96,385,836 respectively. These amounts are included in the net appreciation in fair value of investments as reported on the combining statements of changes in pension plan fiduciary net position and postemployment healthcare plan net position. The calculation of realized gains and losses is independent of the calculation of net appreciation in the fair value of plan investments. Investments purchased in a previous year and sold in the current year result in their realized gains and losses being reported in the current year and their net appreciation in Plan assets being reported in both the current year and the previous years.

#### Note 6: When-Issued Transactions

The Plan may purchase securities on a when-issued basis, that is, obligate itself to purchase securities with delivery and payment to occur at a later date. At the time the Plan enters into a commitment to purchase the security, the transaction is recorded at the purchase price which equals fair value. The value at delivery may be more or less than the purchase price. No interest accrues to the Plan until delivery and payment takes place. As of December 31, 2017 and 2016, the Plan contracted to acquire securities on a when-issued basis with a total principal amount of approximately \$73,800,000 and \$94,100,000 respectively.

## Note 7: Fair Value Measurements

GASB Statement No. 72, *Fair Value Measurement and Application*, established a fair value hierarchy that prioritizes the inputs to valuation techniques used to measure fair value. The hierarchy gives the highest priority to unadjusted quoted prices in active markets for identical assets or liabilities (Level 1 measurements) and the lowest priority to unobservable inputs (Level 3 measurements). The three levels of the fair value hierarchy are described below:

### Basis of Fair Value Measurement

|         |  |
|---------|--|
| Level 1 | Unadjusted quoted prices in active markets that are accessible at the measurement date for identical, unrestricted assets or liabilities                             |
| Level 2 | Quoted prices in markets that are not considered to be active or financial instruments for which all significant inputs are observable either directly or indirectly |
| Level 3 | Prices or valuations that require inputs that are both significant to the fair value measurement and unobservable  |

The Plan categorizes its fair value measurements within the fair value hierarchy established by generally accepted accounting principles. The Plan has the following recurring fair value measurements as of December 31, 2017 and 2016:

|  | <u>Total</u>            | <b>Fair Value Measurements at 12/31/2017 Using</b>                         |   |  |
|--|-------------------------|--|---|--|
|  |                         | Quoted Prices<br>in Active<br>Markets for<br>Identical Assets<br>(Level 1) | Significant<br>Other<br>Observable<br>Inputs<br>(Level 2) | Significant<br>Unobservable<br>Inputs<br>(Level 3) |
| <b>Investments by fair value level</b>               |                         |  |   |  |
| U.S. and international equities                      | \$5,840,815,927         | \$5,840,815,927  | \$ -  | \$ -   |
| U.S. Government and government<br>agency obligations | 1,042,879,014           | -  | 1,042,879,014   | -  |
| Corporate and foreign government<br>obligations      | 892,437,094             | -  | 892,437,094   | -  |
| Exchange traded funds                                | <u>172,932,810</u>      | <u>172,932,810</u>   | <u>-</u>  | <u>-</u>   |
| Total investments by fair value level                | <u>7,949,064,845</u>    | <u>\$6,013,748,737</u>   | <u>\$1,935,316,108</u>                                    | <u>\$ -</u>  |
| <b>Investments measured at net asset value</b>       | <u>2,296,925,069</u>    |  |   |  |
| Total investments at fair value                      | <u>\$10,245,989,914</u> |  |   |  |

FINANCIAL SECTION

Notes to Financial Statements (continued)

**Note 7: Fair Value Measurements (continued)**

|  | <u>Total</u>           | <b>Fair Value Measurements at 12/31/2016 Using</b>                         |   |  |
|--|------------------------|--|---|--|
|  |                        | Quoted Prices<br>in Active<br>Markets for<br>Identical Assets<br>(Level 1) | Significant<br>Other<br>Observable<br>Inputs<br>(Level 2) | Significant<br>Unobservable<br>Inputs<br>(Level 3) |
| <b>Investments by fair value level</b>               |                        |  |   |  |
| U.S. and international equities                      | \$4,264,200,142        | \$4,264,200,142  | \$ -  | \$ -   |
| U.S. Government and government<br>agency obligations | 1,026,986,177          | -  | 1,026,986,177   | -  |
| Corporate and foreign government<br>obligations      | 822,348,141            | -  | 822,348,141   | -  |
| Exchange traded funds                                | <u>483,639,898</u>     | <u>483,639,898</u>   | <u>-</u>  | <u>-</u>   |
| Total investments by fair value level                | 6,597,174,358          | <u>\$4,747,840,040</u>   | <u>\$1,849,334,318</u>                                    | <u>\$ -</u>  |
| <b>Investments measured at net asset value</b>       | <u>2,401,754,620</u>   |  |   |  |
| Total investments at fair value                      | <u>\$8,998,928,978</u> |  |   |  |

Level 1 Measurements

U.S. and international equities and exchange traded funds are traded in active markets on national and international securities exchanges and are valued at closing prices on the measurement date.

Level 2 Measurements

U.S. Government and government agency obligations and corporate and foreign government obligations are generally valued by benchmarking model-derived prices to quoted market prices and trade data for identical or comparable securities. To the extent that quoted prices are not available, fair value is determined based on a valuation model that include inputs such as interest rate yield curves and credit spreads. Securities traded in markets that are not considered active are valued based on quoted market prices, broker to dealer quotations, or alternative pricing sources with reasonable levels of price transparency. Securities that trade infrequently and therefore have little or no price transparency are valued using the investment manager’s best estimates.



**Note 7: Fair Value Measurements (continued)**

The valuation methods for investments measured at net asset value (NAV) are presented on the following table:

|   | <u>Fair Value</u><br><u>12/31/17</u> | <u>Fair Value</u><br><u>12/31/16</u> | <u>Unfunded</u><br><u>Commitments</u> | <u>Redemption</u><br><u>Frequency</u><br><u>(If Eligible)</u> | <u>Redemption</u><br><u>Notice</u><br><u>Period</u> |
|---|--------------------------------------|--------------------------------------|---------------------------------------|---|---|
| <b>Investments measured at net asset value</b>          |                                      |                                      |                                       |   |   |
| Collective international equity fund (1)                |                                      |                                      |                                       |   |   |
| Lazard/Wilmington Emerging Markets Sudan Free Portfolio | \$ 77,439,593                        | \$ 67,885,886                        | -                                     | Daily   | N/A   |
| Commingled fixed income fund (2)                        |                                      |                                      |                                       |   |   |
| MacKay Shields Defensive Bond Arbitrage Fund Ltd.       | 28,067,670                           | 26,821,800                           | -                                     | Daily   | 5 days  |
| Private global fixed fund limited partnership (3)       |                                      |                                      |                                       |   |   |
| Franklin Templeton Global Multisector Plus Fund, L.P.   | 214,787,328                          | 206,118,267                          | -                                     | Monthly   | 15 days   |
| Private equities (4)                                    | 393,324,331                          | 267,153,632                          | 318,354,000                           | Closed Ended  | N/A   |
| Hedge funds (5)   |                                      |                                      |                                       |   |   |
| Burnham Harbor Fund Ltd.                                | 477,351,993                          | 446,348,433                          | -                                     | Monthly   | 95 days   |
| Buckingham Fund   | -                                    | 16,335,874                           | -                                     | Quarterly   | 65 days   |
| RC Kenwood Fund Ltd.                                    | 184,407,090                          | 171,409,640                          | -                                     | Quarterly   | 90 days   |
| Real estate funds (6)                                   |                                      |                                      |                                       |   |   |
| JPMCB Strategic Property Fund                           | 262,575,288                          | 247,049,922                          | -                                     | Quarterly   | 45 days   |
| PRISA Separate Account                                  | 237,020,184                          | 231,002,063                          | -                                     | Quarterly   | 90 days   |
| Others  | 125,803,796                          | 119,561,575                          | 58,200,000                            | Quarterly   | 90 days   |
| Short-term investments (7)                              |                                      |                                      |                                       |   |   |
| BNY Mellon EB Temporary Investment Fund                 | 296,147,796                          | 602,067,528                          |                                       | Daily   | N/A   |
| Total investments measured at net asset value           | <u>\$2,296,925,069</u>               | <u>\$2,401,754,620</u>               |                                       |   |   |

(1) Collective international equity fund - The investment objective is to achieve long-term capital appreciation by investing primarily in equity and equity-related securities of issuers that are located, or do significant business, in emerging market countries. The fair value of the investment in the fund has been determined using the NAV per share of the investment.

(2) Commingled fixed income fund - The fund's investment objective is to track the performance of the Barclays U.S. Aggregate Index. The fair value of the investment in the fund has been determined using the NAV per share of the investment.

## FINANCIAL SECTION

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### Notes to Financial Statements (continued)

#### Note 7: Fair Value Measurements (continued)

(3) Private global fixed income fund limited partnership - The partnership's investment objective is to maximize total investment return by investing in a portfolio of fixed and floating rate debt securities and debt obligations of governments, government-related or corporate issuers worldwide, as well as derivative financial instruments. The fair value of the investment in the partnership fund has been determined using the NAV per share (or its equivalent) of the investment.

(4) Private equities - This investment consists of 51 limited partnership investments in 2017 and 47 in 2016, with an investment objective to achieve long-term capital appreciation and capital preservation through investments in limited partnerships, privately issued securities, private equity funds, and other pooled investments. Closed-end limited partnership interests are generally illiquid and cannot be redeemed. It is expected that liquidation of the limited partnership interests will generally coincide with the terms of the various underlying partnership agreements. These underlying private equity partnerships generally have a fund life per the Limited Partnership Agreements of approximately 10 to 12 years plus 2 to 3 one-year extensions. However, the underlying general partners may extend their funds indefinitely to facilitate an orderly liquidation of the underlying assets. The fair value of the investments in this type has been determined using the NAV per share (or its equivalent) of the investments.

(5) Hedge funds - The investment objective of the hedge funds is to invest in non-traditional portfolio managers, diversified portfolios of hedge funds having a low correlation with major investment markets, and diversified groups of alternative investment funds that invest or trade in a wide variety of financial instruments and strategies. The fair value of the investment in the hedge funds has been determined using the NAV per share (or its equivalent) of the investment.

(6) Real estate funds - This investments include a commingled pension trust fund, an insurance company separate account, and other real estate funds that are designed as funding vehicles for tax-qualified pension plans. Their investments are comprised primarily of real estate investments either directly owned or through partnership interests and mortgage and other loans on income producing real estate. The fair values of the investments in this type have been determined using the NAV per share (or its equivalent) of the investments. Due to the nature of the investments and available cash on hand, significant redemptions in this type of investment may at times be subject to additional restrictions.

(7) Short-term investment - This investment's objective is to invest in short-term investments of high quality and low risk to protect capital while achieving investment returns. The fair value of the investment in the fund has been determined using the NAV per share of the investment.

## Note 8: Securities Lending

State Statutes and the investment policy permit the Plan to lend its securities to broker-dealers and other entities with a simultaneous agreement to return collateral for the same securities in the future. The Plan's custodian, acting as the lending agent, lends securities for collateral in the form of cash, U.S. Government obligations and irrevocable letters of credit equal to 102% of the fair value of domestic securities plus accrued interest and 105% of the fair value of foreign securities plus accrued interest.

The Plan does not have the right to sell or pledge securities received as collateral unless the borrower defaults. The average term of securities loaned was 87 days for 2017 and 43 days for 2016; however, any loan may be terminated on demand by either the Plan or the borrower. Cash collateral was invested in a separately managed portfolio, which had an average weighted maturity at December 31, 2017 and 2016 of 90 and 84 days, respectively.

As of December 31, 2017 and 2016, the fair value (carrying amount) of loaned securities was \$1,402,318,531 and \$1,253,039,566 respectively. As of December 31, 2017 and 2016, the fair value (carrying amount) of cash collateral received by the Plan was \$1,218,975,757 and \$1,074,265,161 respectively. The cash collateral is included as an asset and a corresponding liability on the combining statements of pension plan fiduciary net position and postemployment healthcare plan net position. As of December 31, 2017 and 2016, the fair value (carrying amount) of non-cash collateral received by the Plan was \$219,920,960 and \$212,162,888 respectively.

Although the Plan's securities lending activities are collateralized as described above, they involve both market and credit risk. In this context, market risk refers to the possibility that the borrower of securities will be unable to collateralize the loan upon a sudden material change in the fair value of the loaned securities. Credit risk refers to the possibility that counterparties involved in the securities lending program may fail to perform in accordance with the terms of their contracts.

Indemnification deals with the situation in which a client's securities are not returned due to the insolvency of a borrower. The contract with the lending agent requires indemnification to the Plan if borrowers fail to return the securities or fail to pay the Plan for income distributions by the issuers of securities while the securities are on loan.

During 2017 and 2016, there were no losses due to default of a borrower or the lending agent.

## FINANCIAL SECTION

### Notes to Financial Statements (continued)

#### Note 8: Securities Lending (continued)

A summary of securities loaned at fair value as of December 31, 2017 and 2016 is as follows:

|  | <u>2017</u>                   | <u>2016</u>                   |
|--|-------------------------------|-------------------------------|
| Securities loaned - backed by cash collateral          |                               |                               |
| U.S. and international equities                        | \$ 840,093,373                | \$ 665,348,723                |
| U.S. Government and government<br>agency obligations   | 105,971,706                   | 109,193,962                   |
| Exchanged traded funds                                 | 163,399,993                   | 170,060,838                   |
| Corporate and foreign government obligations           | 79,146,994                    | 102,952,991                   |
| Total securities loaned -<br>backed by cash collateral | <u>1,188,612,066</u>          | <u>1,047,556,514</u>          |
| Securities loaned - backed by non-cash collateral      |                               |                               |
| U.S. Government and government<br>agency obligations   | 213,706,465                   | 205,483,052                   |
| Total  | <u><u>\$1,402,318,531</u></u> | <u><u>\$1,253,039,566</u></u> |

## Note 9: Employer's Postemployment Healthcare Liability

### Plan Description

The Plan administers a Postemployment Group Healthcare Benefit Plan (PGHBP), a single-employer defined benefit postemployment healthcare plan. The PGHBP is administered in accordance with Chapter 40, Article 5/10 of the Illinois Compiled Statutes, which assigns the authority to establish and amend benefit provisions to the Plan's Board of Trustees. PGHBP provides a healthcare benefit to annuitants of Cook County, Illinois (the employer) who elect to participate in the PGHBP.

At December 31, 2017 and 2016, participants consisted of the following:

|  | <u>2017</u>   | <u>2016</u>   |
|--|---------------|---------------|
| Active members   | 20,349        | 20,969        |
| Inactive plan members or beneficiaries<br>currently receiving benefit payments | 11,605        | 11,660        |
| Inactive plan members entitled to but not<br>yet receiving benefit payments    | <u>1,528</u>  | <u>1,489</u>  |
| Total  | <u>33,482</u> | <u>34,118</u> |

**Benefits Provided** - The PGHBP provides healthcare and vision benefits for annuitants and their dependents.

**Administrative Costs** - Administrative costs associated with PGHBP are paid by the Plan's employer contributions and annuitant health benefit contributions.

**Contributions** - The employer funds the PGHBP on a "pay-as-you-go" basis. The employee and spouse annuitants pay approximately 50% and 35% of the annual medical costs, respectively. The remaining costs are borne by the employer.

**Method of Accounting** - The PGHBP's financial statements have been combined with the Plan's financial statements and are presented using the accrual basis of accounting. Healthcare expenses are recognized when incurred and estimable.

### Employer's Net Postemployment Healthcare Liability

The components of the employer's net postemployment healthcare liability at December 31, 2017 and 2016, were as follows:

|   | <u>2017</u>          | <u>2016</u>          |
|---|----------------------|----------------------|
| Total postemployment healthcare liability   | \$ 2,148,249,441     | \$ 2,229,886,669     |
| Plan fiduciary net position   | -                    | -                    |
| Employer's net postemployment<br>healthcare liability   | <u>2,148,249,441</u> | <u>2,229,886,669</u> |
| Plan fiduciary net position as a percentage of<br>the total postemployment healthcare liability | <u>0.00%</u>         | <u>0.00%</u>         |

Contributions for postemployment healthcare benefits are made on a "pay-as-you-go" basis, resulting in a 0.00% funded ratio. See the schedule of changes in the employer's net postemployment healthcare liability and related ratios in the required supplementary information for additional information related to the funded status of the PGHBP.

## FINANCIAL SECTION

### Notes to Financial Statements (continued)

#### Note 9: Employer's Postemployment Healthcare Liability (continued)

The net postemployment healthcare liability was determined by actuarial valuation performed as of December 31, 2017 using the following actuarial methods and assumptions:

|                              |   |
|------------------------------|---|
| Actuarial valuation date:    | December 31, 2017   |
| Actuarial cost method        | Entry Age Normal  |
| Actuarial assumptions:       |   |
| Inflation                    | 2017 - 2.75% per year, 2016 - 3.25% per year  |
| Salary increases             | 2017 - 3.50% to 8.00%, based on age,<br>2016 - 3.75% to 8.00%, based on age   |
| Health care cost trend rates | 2017 - 7.25% in the first year, decreasing by .25% per year until an ultimate rate of 4.75% is reached for pre-medicare 5.75% in the first year, decreasing by .25% per year until an ultimate rate of 4.75% is reached for post-medicare<br><br>2016 - 7.50% in the first year, decreasing by .25% per year until an ultimate rate of 4.75% is reached for pre-medicare 6.00% in the first year, decreasing by .25% per year until an ultimate rate of 4.75% is reached for post-medicare. |
| Mortality                    | 2017 - RP-2014 Blue Collar Mortality Table, base year 2006, Conduent Modified MP-2017 projection scale<br>2016 - RP-2000 Blue Collar Mortality Table, base year 2000, fully generational based on Scale BB  |

The actuarial assumptions used in the December 31, 2017 valuation were based on the results of an actuarial experience study conducted by Conduent, Inc. over the period 2013 through 2016.

#### Discount Rate

The blended discount rate used to measure the total postemployment healthcare liability at December 31, 2017 was 3.16%. The projection of cash flows used to determine the discount rate assumed that the employer's contributions will continue to follow the current funding policy. Based on this assumption, the Plan's fiduciary net position was projected to be insufficient to make all projected future benefit payments of current plan members. Municipal bond rates of 3.16% at December 31, 2017, and the long-term investment rate of return of 0% were used in the development of the blended discount rates. The municipal bond rates are based on the S&P Municipal Bond 20 Year High Grade Rate Index.

**Note 9: Employer's Postemployment Healthcare Liability (continued)****Sensitivity of the Net Postemployment Healthcare Liability to Changes in the Discount Rate**

The following is an analysis of the net postemployment healthcare liability's sensitivity to changes in the discount rate at December 31, 2017. The following table presents the net postemployment healthcare liability of the employer using the blended discount rate as well as the employer's net postemployment healthcare liability calculated using a discount rate 1 percent lower and 1 percent higher than the current discount rate:

|   | <b>1% Decrease</b>                   | <b>Current<br/>Discount<br/>Rate</b>   | <b>1% Increase</b>                     |
|---|--------------------------------------|--|--|
| Net Postemployment<br>Healthcare Liability as of<br>December 31, 2017 | <u>2.16%</u><br><u>2,532,858,756</u> | <u>3.16%</u><br><u>\$2,148,249,441</u> | <u>4.16%</u><br><u>\$1,842,064,933</u> |

**Sensitivity of the Net Postemployment Healthcare Liability to Changes in the Health Care Cost Trend Rate**

The following is an analysis of the net postemployment healthcare liability's sensitivity to changes in the discount rate at December 31, 2017. The following table presents the net postemployment healthcare liability of the employer using the blended discount rate as well as the employer's net postemployment healthcare liability calculated using a discount rate 1 percent lower and 1 percent higher than the current discount rate:

|   | <b>1% Decrease</b>     | <b>Health Care<br/>Cost Trend<br/>Rate</b> | <b>1% Increase</b>     |
|---|------------------------|--|------------------------|
| Net Postemployment<br>Healthcare Liability as of<br>December 31, 2017 | <u>\$1,805,019,432</u> | <u>\$2,148,249,441</u>                     | <u>\$2,593,628,968</u> |

## FINANCIAL SECTION

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### Notes to Financial Statements (continued)

#### Note 10: Related Party Transactions

The Plan has common Trustees and shares office space with the Forest Preserve District Employees' Annuity and Benefit Fund of Cook County (Forest Fund) who reimburses the Plan for shared administrative services provided by the Plan. During the years ended December 31, 2017 and 2016, the Plan allocated administrative expenditures of \$109,430 and \$101,167 respectively to the Forest Fund.

As of December 31, 2017 and 2016, the Forest Fund owes the Plan \$359,334 and \$463,181 respectively. These amounts include plan transfers of Plan members transferring from one plan to another.

#### Note 11: Pronouncements Issued Not Yet Effective

In June 2015, GASB issued Statement No. 75, *Accounting and Financial Reporting for Postemployment Benefits Other Than Pensions*. Statement No. 75 replaces the requirements of Statement No. 45, *Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions*. Statement No. 75 requires governments to report a liability on the financial statements for the other postemployment benefits that they provide. Statement No. 75 also requires more extensive note disclosures and required supplementary information about the other postemployment benefit liabilities. Statement No. 75 is effective for the Plan's fiscal year ending December 31, 2018.

In November 2016, GASB issued Statement No. 83, *Certain Asset Retirement Obligations*. Statement No. 83 addresses accounting and financial reporting for certain asset retirement obligations and establishes criteria for determining the timing and pattern of recognition of a liability and a corresponding deferred outflow of resources for asset retirement obligations. Statement No. 83 is effective for the Plan's fiscal year ending December 31, 2019.

In January 2017, GASB issued Statement No. 84, *Fiduciary Activities*. Statement No. 84 improves guidance regarding the identification of fiduciary activities for accounting and financial reporting purposes and how those activities should be reported. Statement No. 84 is effective for the Plan's fiscal year ending December 31, 2019.

In March 2017, GASB issued Statement No. 85, *Omnibus 2017*. Statement No. 85 addresses practice issues that have been identified during implementation and application of certain GASB Statements. It addresses a variety of topics including issues related to blending component units, goodwill, fair value measurement and application, and postemployment benefits (pensions and other postemployment benefits). Statement No. 85 is effective for the Plan's fiscal year ending December 31, 2018.

In May 2017, GASB issued Statement No. 86, *Certain Debt Extinguishment Issues*. Statement No. 86 was issued to improve consistency in accounting and financial reporting for in-substance defeasance of debt by providing guidance for transactions in which cash and other monetary assets acquired with only existing resources are placed in an irrevocable trust for the sole purpose of extinguishing debt. Statement No. 86 also improves accounting and financial reporting for prepaid insurance on debt that is extinguished and notes to financial statements for debt that is defeased in substance. Statement No. 86 is effective for the Plan's fiscal year ending December 31, 2018.



**Note 11: Pronouncements Issued Not Yet Effective (continued)**

In June 2017, GASB issued Statement No. 87, *Leases*. Statement No. 87 was issued to improve accounting and financial reporting for leases by governments. This Statement increases the usefulness of governmental financial statements by requiring recognition of certain lease assets and liabilities for leases that were previously classified as operating leases. Statement No. 87 establishes a single model for lease accounting based on the foundational principle that leases are financings of the right to use an underlying asset. Statement No. 87 is effective for the Plan's fiscal year ending December 31, 2020.

In June 2017, GASB issued Statement No. 88, *Certain Disclosures Related to Debt, Including Direct Borrowings and Direct Placements*. Statement No. 88 was issued to improve the information that is disclosed in notes to government financial statements related to debt. This Statement also clarifies which liabilities governments should include when disclosing information related to debt. Statement No. 88 is effective for the Plan's fiscal year ending December 31, 2019.

The Plan is currently evaluating the impact of adopting the aforementioned GASB Statements.

## Required Supplementary Information - Pension

### Schedule of Changes in the Employer's Net Pension Liability and Related Ratios

|  | <u>December 31, 2017</u>        |
|--|---------------------------------|
| Total pension liability  |                                 |
| Service cost   | \$ 478,904,097                  |
| Interest   | 1,082,982,064                   |
| Difference between expected and actual experience                            | (152,859,373)                   |
| Changes of assumptions   | (950,493,320)                   |
| Expected benefit payments, including refunds of employee contributions       | (757,930,854)                   |
| Net change in total pension liability  | <u>(299,397,386)</u>            |
| Total pension liability  |                                 |
| Beginning of year  | <u>23,240,192,010</u>           |
| End of year  | <u><u>\$22,940,794,624</u></u>  |
| Plan fiduciary net position  |                                 |
| Contributions - employer   | \$ 511,750,985                  |
| Contributions - employee   | 138,826,184                     |
| Net investment income  | 1,399,625,874                   |
| Expected benefit payments, including refunds of employee contributions       | (757,930,854)                   |
| Administrative expenses  | (5,406,034)                     |
| Other  | <u>5,359,418</u>                |
| Net change in plan fiduciary net position                                    | <u>1,292,225,573</u>            |
| Plan fiduciary net position  |                                 |
| Beginning of year  | <u>9,115,657,870</u>            |
| End of year  | <u><u>\$ 10,407,883,443</u></u> |
| Employer's net pension liability   | <u>\$ 12,532,911,181</u>        |
| Plan fiduciary net position as a percentage of the total pension liability   | <u>45.37%</u>                   |
| Covered payroll  | <u>\$ 1,567,480,401</u>         |
| Employer's net pension liability as a percentage of covered-employee payroll | <u>799.56%</u>                  |

*Note:*

*This schedule is intended to show information for ten years.*

*The additional years' information will be displayed as it becomes available.*

## Schedule of Changes in the Employer's Net Pension Liability and Related Ratios (continued)

|  | <u>December 31, 2016</u>       |
|--|--------------------------------|
| Total pension liability  |                                |
| Service cost   | \$ 559,176,234                 |
| Interest   | 1,002,950,495                  |
| Difference between expected and actual experience                            | 318,014,746                    |
| Changes of assumptions   | (1,893,474,930)                |
| Expected benefit payments, including refunds of employee contributions       | <u>(709,560,225)</u>           |
| Net change in total pension liability  | (722,893,680)                  |
| Total pension liability  |                                |
| Beginning of year  | <u>23,963,085,690</u>          |
| End of year  | <u><u>\$23,240,192,010</u></u> |
| Plan fiduciary net position  |                                |
| Contributions - employer   | \$414,703,155                  |
| Contributions - employee   | 139,355,592                    |
| Net investment income  | 629,442,470                    |
| Expected benefit payments, including refunds of employee contributions       | (709,560,225)                  |
| Administrative expenses  | (5,373,555)                    |
| Other  | <u>4,046,158</u>               |
| Net change in plan fiduciary net position                                    | 472,613,595                    |
| Plan fiduciary net position  |                                |
| Beginning of year  | 8,643,044,275                  |
| End of year  | <u><u>\$ 9,115,657,870</u></u> |
| Employer's net pension liability   | <u><u>\$14,124,534,140</u></u> |
| Plan fiduciary net position as a percentage of the total pension liability   | <u>39.22%</u>                  |
| Covered payroll  | <u><u>\$ 1,580,251,254</u></u> |
| Employer's net pension liability as a percentage of covered-employee payroll | <u>893.82%</u>                 |

*Note:*

*This schedule is intended to show information for ten years.*

*The additional years' information will be displayed as it becomes available.*

*See Report of Independent Auditors.*

## FINANCIAL SECTION

### Required Supplementary Information - Pension (continued)

#### Schedule of Changes in the Employer's Net Pension Liability and Related Ratios (continued)

|  | <u>December 31, 2015</u>       |
|--|--------------------------------|
| Total pension liability  |                                |
| Service cost   | \$ 496,161,454                 |
| Interest   | 994,674,970                    |
| Difference between expected and actual experience                            | (126,330,351)                  |
| Changes of assumptions   | 1,329,087,966                  |
| Expected benefit payments, including refunds of employee contributions       | <u>(676,470,215)</u>           |
| Net change in total pension liability  | 2,017,123,824                  |
| Total pension liability  |                                |
| Beginning of year  | 21,945,961,866                 |
| End of year  | <u><u>\$23,963,085,690</u></u> |
| Plan fiduciary net position  |                                |
| Contributions - employer   | \$ 136,075,504                 |
| Contributions - employee   | 137,707,719                    |
| Net investment income  | (21,896,696)                   |
| Expected benefit payments, including refunds of employee contributions       | (676,470,215)                  |
| Administrative expenses  | (5,151,110)                    |
| Other  | <u>4,380,293</u>               |
| Net change in plan fiduciary net position                                    | <u>(425,354,505)</u>           |
| Plan fiduciary net position  |                                |
| Beginning of year  | 9,068,398,780                  |
| End of year  | <u><u>\$ 8,643,044,275</u></u> |
| Employer's net pension liability   | <u><u>\$15,320,041,415</u></u> |
| Plan fiduciary net position as a percentage of the total pension liability   | <u><u>36.07%</u></u>           |
| Covered payroll  | <u><u>\$ 1,572,417,298</u></u> |
| Employer's net pension liability as a percentage of covered-employee payroll | <u><u>974.30%</u></u>          |

*Note:*

*This schedule is intended to show information for ten years.*

*The additional years' information will be displayed as it becomes available.*

*See Report of Independent Auditors.*

## Schedule of Changes in the Employer's Net Pension Liability and Related Ratios (continued)

|  | <u>December 31, 2014</u> |
|--|--------------------------|
| Total pension liability  |                          |
| Service cost   | \$ 491,887,347           |
| Interest   | 958,433,835              |
| Difference between expected and actual experience                            | -                        |
| Changes of assumptions   | -                        |
| Expected benefit payments, including refunds of employee contributions       | <u>(622,003,259)</u>     |
| Net change in total pension liability  | 828,317,923              |
| Total pension liability  |                          |
| Beginning of year  | 21,117,643,943           |
| End of year  | <u>\$ 21,945,961,866</u> |
| Plan fiduciary net position  |                          |
| Contributions - employer   | \$ 146,075,414           |
| Contributions - employee   | 129,325,318              |
| Net investment income  | 488,890,897              |
| Expected benefit payments, including refunds of employee contributions       | <u>(622,003,259)</u>     |
| Administrative expenses  | (5,010,206)              |
| Other  | <u>3,753,960</u>         |
| Net change in plan fiduciary net position                                    | 141,032,124              |
| Plan fiduciary net position  |                          |
| Beginning of year  | 8,927,366,656            |
| End of year  | <u>\$ 9,068,398,780</u>  |
| Employer's net pension liability   | <u>\$12,877,563,086</u>  |
| Plan fiduciary net position as a percentage of the total pension liability   | 41.32%                   |
| Covered payroll  | <u>\$1,514,550,023</u>   |
| Employer's net pension liability as a percentage of covered-employee payroll | <u>850.26%</u>           |

*Note:*

*This schedule is intended to show information for ten years.*

*The additional years' information will be displayed as it becomes available.*

*See Report of Independent Auditors.*

**FINANCIAL SECTION**

**Required Supplementary Information - Pension (continued)**

**Schedule of Employer Contributions - Last Ten Fiscal Years**

|  | <u>2017</u>             | <u>2016</u>             | <u>2015</u>             | <u>2014</u>             | <u>2013</u>             |
|--|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Actuarially determined contribution                                  | \$ 514,888,487          | \$ 519,642,931          | \$ 595,370,046          | \$ 540,218,287          | \$ 493,724,370          |
| Contributions in relation to the actuarially determined contribution | <u>(511,750,985)</u>    | <u>(414,703,155)</u>    | <u>(136,075,504)</u>    | <u>(146,075,414)</u>    | <u>(147,720,014)</u>    |
| Contribution deficiency  | <u>\$ 3,137,502</u>     | <u>\$ 104,939,776</u>   | <u>\$ 459,294,542</u>   | <u>\$ 394,142,873</u>   | <u>\$ 346,004,356</u>   |
| Covered employee payroll   | <u>\$ 1,567,480,401</u> | <u>\$ 1,580,251,254</u> | <u>\$ 1,572,417,298</u> | <u>\$ 1,514,550,023</u> | <u>\$ 1,484,269,715</u> |
| Contributions as a percentage of covered employee payroll            | <u>32.65%</u>           | <u>26.24%</u>           | <u>8.65%</u>            | <u>9.64%</u>            | <u>9.95%</u>            |

*See Report of Independent Auditors.*

**Notes to Schedule of Employer Contributions**

Actuarially determined contribution rates are calculated as of December 31, one year prior to the fiscal year in which contributions are reported.

Valuation Date: December 31, 2017

Methods and assumptions used to determine contribution rates:

|                                  |  |
|----------------------------------|--|
| Actuarial cost method            | Entry Age Normal   |
| Amortization method              | Level Dollar - Open  |
| Remaining amortization period    | 30 years   |
| Asset valuation method           | Five Year Smoothed Average Market  |
| Inflation                        | 2.75% per year, compounded annually  |
| Salary Increases                 | 1.50% to 7.50%, based on age   |
| Investment Rate of Return        | 7.25% per year, compounded annually  |
| Retirement age                   | Based on actual past experience, assume all employees retire by age 80 (Tier 1 participants) and 75 (Tier 2 participants)                          |
| Mortality                        | RP-2014 Blue Collar Mortality Table, base year 2006, Conduent Modified MP-2017 projection scale  |
| Postretirement annuity increases | Tier 1 participants - 3.0% compounded annually<br>Tier 2 participants - the lesser of 3.0% or one half of the increase in the Consumer Price Index |

### Schedule of Employer Contributions - Last Ten Fiscal Years (continued)

|   | <u>2012</u>             | <u>2011</u>             | <u>2010</u>             | <u>2009</u>             | <u>2008</u>             |
|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Actuarially determined contribution                                     | \$ 454,327,461          | \$ 352,850,988          | \$ 283,892,734          | \$ 352,850,988          | \$ 283,892,734          |
| Contributions in relation to the<br>actuarially determined contribution | <u>(152,734,539)</u>    | <u>(160,652,118)</u>    | <u>(144,539,577)</u>    | <u>(152,506,089)</u>    | <u>(150,227,360)</u>    |
| Contribution deficiency   | <u>\$ 301,592,922</u>   | <u>\$ 192,198,870</u>   | <u>\$ 139,353,157</u>   | <u>\$ 134,555,443</u>   | <u>\$ 131,996,326</u>   |
| Covered employee payroll  | <u>\$ 1,478,253,368</u> | <u>\$ 1,456,444,123</u> | <u>\$ 1,494,093,569</u> | <u>\$ 1,498,161,713</u> | <u>\$ 1,463,372,408</u> |
| Contributions as a percentage of<br>covered employee payroll            | <u>10.33%</u>           | <u>11.03%</u>           | <u>9.67%</u>            | <u>10.18%</u>           | <u>10.27%</u>           |

*See Report of Independent Auditors.*

### Schedule of Investment Returns

|  | <u>2017</u> | <u>2016</u> | <u>2015</u> | <u>2014</u> |
|--|-------------|-------------|-------------|-------------|
| Annual money-weighted rate of return,<br>net of investment expense | 15.35%      | 7.67%       | (0.10)%     | 5.90%       |

*Note:*

*This schedule is intended to show information for ten years.*

*The additional years' information will be displayed as it becomes available.*

# Required Supplementary Information - Postemployment Healthcare

## Schedule of Changes in the Employer's Postemployment Healthcare Liability and Related Ratios

|   | <u>2017</u>                   |
|---|-------------------------------|
| Total postemployment healthcare liability   |                               |
| Service cost  | \$ 82,344,830                 |
| Interest  | 84,911,522                    |
| Changes in benefit terms  | (79,293,990)                  |
| Difference between expected and actual experience   | (55,814,160)                  |
| Changes of assumptions  | (66,330,809)                  |
| Benefit payments  | <u>(47,454,621)</u>           |
| Net change in total postemployment healthcare liability   | (81,637,228)                  |
| Total postemployment healthcare liability   |                               |
| Beginning of year   | 2,229,886,669                 |
| End of year   | <u><u>\$2,148,249,441</u></u> |
| Plan fiduciary net position   |                               |
| Contributions - employer  | \$47,454,641                  |
| Benefit payments - net  | <u>(47,454,641)</u>           |
| Net change in plan fiduciary net position   | -                             |
| Plan fiduciary net position   |                               |
| Beginning of year   | -                             |
| End of year   | <u><u>\$ -</u></u>            |
| Employer's net postemployment healthcare liability  | <u><u>\$2,148,249,441</u></u> |
| Plan fiduciary net position as a percentage of the total postemployment healthcare liability      | <u><u>0.00%</u></u>           |
| Covered-employee payroll  | <u><u>\$1,602,986,483</u></u> |
| Employer's net postemployment healthcare liability<br>as a percentage of covered employee-payroll | <u><u>134.02%</u></u>         |

*This schedule is intended to show information for ten years.  
The additional years' information will be displayed as it becomes available.*

*See Report of Independent Auditors.*



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**FINANCIAL SECTION**

**Required Supplementary Information - Postemployment Healthcare (continued)**

**Schedule of Employer Contributions and Related Notes - Last Ten Fiscal Years**

|   | <u>2017</u>             | <u>2016</u>             | <u>2015</u>            | <u>2014</u>             | <u>2013</u>             |
|---|-------------------------|-------------------------|------------------------|-------------------------|-------------------------|
| Actuarially determined contribution                                     | \$ 187,348,423          | \$ 206,678,514          | \$ 190,871,452         | \$ 189,907,202          | \$ 178,698,965          |
| Contributions in relation to the<br>actuarially determined contribution | <u>(47,454,641)</u>     | <u>(49,565,249)</u>     | <u>(50,756,817)</u>    | <u>(43,957,458)</u>     | <u>(40,097,630)</u>     |
| Contribution deficiency   | <u>\$ 139,893,782</u>   | <u>\$ 157,113,265</u>   | <u>\$ 140,114,635</u>  | <u>\$ 145,949,744</u>   | <u>\$ 138,601,335</u>   |
| Covered employee payroll  | <u>\$ 1,602,986,483</u> | <u>\$ 1,609,559,234</u> | <u>\$1,597,597,077</u> | <u>\$ 1,514,550,023</u> | <u>\$ 1,484,269,715</u> |
| Contributions as a percentage of<br>covered employee payroll            | <u>2.96%</u>            | <u>3.08%</u>            | <u>3.18%</u>           | <u>2.90%</u>            | <u>2.70%</u>            |

*See Report of Independent Auditors.*

**Notes to Schedule of Employer Contributions**

Actuarially determined contribution rates are calculated as of December 31, one year prior to the fiscal year in which contributions are reported.

Valuation Date: December 31, 2017

Methods and assumptions used to determine contribution rates:

|                               |   |
|-------------------------------|---|
| Actuarial cost method         | Entry Age Normal  |
| Amortization method           | Level Dollar - Open   |
| Remaining amortization period | 30 years  |
| Asset valuation method        | Five Year Smoothed Average Market   |
| Inflation                     | 2.75% per year  |
| Salary Increases              | 3.50% to 8%, based on age   |
| Health care cost trend rate   | 7.25% in the first year, decreasing by .25% per year until an ultimate rate of 4.75% is reached for pre-Medicare<br>5.75% in the first year, decreasing by .25% per year until an ultimate rate of 4.75% is reached for post-Medicare |
| Retirement age                | Based on actual past experience, assume all employees retire by age 80 (Tier 1 participants) and 75 (Tier 2 participants)   |
| Mortality                     | RP-2014 Blue Collar Mortality Table, base year 2006, Conduent Modified MP-2017 projection scale   |

## Required Supplementary Information - Postemployment Healthcare (continued)

## Schedule of Employer Contributions and Related Notes - Last Ten Fiscal Years (continued)

|   | <u>2012</u>             | <u>2011</u>             | <u>2010</u>             | <u>2009</u>             | <u>2008</u>             |
|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|
| Actuarially determined contribution                                     | \$ 156,700,388          | \$ 165,176,771          | \$ 163,823,488          | \$ 157,964,519          | \$ 169,823,905          |
| Contributions in relation to the<br>actuarially determined contribution | <u>(37,986,237)</u>     | <u>(38,185,306)</u>     | <u>(40,183,057)</u>     | <u>(35,779,228)</u>     | <u>(37,781,310)</u>     |
| Contribution deficiency   | <u>\$ 118,714,151</u>   | <u>\$ 126,991,465</u>   | <u>\$ 123,640,431</u>   | <u>\$ 122,185,291</u>   | <u>\$ 132,042,595</u>   |
| Covered employee payroll  | <u>\$ 1,478,253,368</u> | <u>\$ 1,456,444,123</u> | <u>\$ 1,494,093,569</u> | <u>\$ 1,498,161,713</u> | <u>\$ 1,463,372,408</u> |
| Contributions as a percentage of<br>covered employee payroll            | <u>2.57%</u>            | <u>2.62%</u>            | <u>2.69%</u>            | <u>2.39%</u>            | <u>2.58%</u>            |

*See Report of Independent Auditors.*

# Supplementary Information

## Schedules of Net Administrative Expenses and Professional and Consulting Fees

Years Ended December 31, 2017 and 2016

|   | <u>2017</u>        | <u>2016</u>        |
|---|--------------------|--------------------|
| <b>Administrative expenses</b>                              |                    |                    |
| Bank charges  | \$ 34,018          | \$ 31,351          |
| Document imaging  | 123,848            | 131,046            |
| Election expense  | 100,228            | 144,933            |
| Employee benefits   | 455,093            | 538,414            |
| Insurance - fidelity, fiduciary and liability               | 129,925            | 120,438            |
| Maintenance of equipment, systems, software and support     | 727,913            | 426,409            |
| Membership, conference and training                         | 33,996             | 32,533             |
| Office expense  | 203,243            | 85,949             |
| Postage   | 97,403             | 111,067            |
| Printing and stationery                                     | 71,062             | 63,217             |
| Professional and consulting fees                            | 486,575            | 629,268            |
| Recovery site expense                                       | 44,658             | 33,983             |
| Regulatory filing fees                                      | 8,000              | 8,000              |
| Rent  | 486,483            | 434,224            |
| Salaries  | 2,504,579          | 2,674,345          |
| Utilities   | 8,440              | 9,545              |
| Total   | <u>5,515,464</u>   | <u>5,474,722</u>   |
| Less administrative expenses allocated to Forest Preserve   |                    |                    |
| District Employees' Annuity and Benefit Fund of Cook County | <u>(109,430)</u>   | <u>(92,675)</u>    |
| Net administrative expenses                                 | <u>\$5,406,034</u> | <u>\$5,373,555</u> |
| <b>Professional and consulting fees</b>                     |                    |                    |
| Actuarial service   | \$ 100,380         | \$ 131,388         |
| Audit   | 65,115             | 73,540             |
| Consulting  | 89,276             | 78,139             |
| Legal   | 205,102            | 319,480            |
| Lobbyist  | 26,702             | 26,721             |
| Total   | <u>\$ 486,575</u>  | <u>\$ 629,268</u>  |

## Schedules of Investment Expenses

### Years Ended December 31, 2017 and 2016

|   | <u>2017</u> | <u>2016</u> |
|---|-------------|-------------|
| <b>Investment manager expense</b>       |             |             |
| Adelante Capital Management             | \$449,819   | \$429,460   |
| Angelo Gordon & Co.                     | 241,141     | 224,717     |
| Ariel Investments                       | 509,823     | 347,552     |
| Blackstone Alternative Asset Management | 5,150,188   | 4,777,861   |
| CastleArk Management                    | 1,163,677   | 966,318     |
| CBRE Global Investors                   | 310,106     | 432,659     |
| Channing Capital Management             | 1,638,207   | 1,355,592   |
| Chicago Equity Partners                 | 70,867      | 200,571     |
| Diversified Global Asset Management     | -           | 561,148     |
| Fortaleza Asset Management, Inc.        | 134,560     | 122,973     |
| Franklin Templeton Investments          | 2,810,259   | 2,438,308   |
| Frontier Capital Management             | 1,241,310   | 992,505     |
| Great Lakes Advisors, Inc.              | 449,812     | 398,055     |
| Herndon Capital Management              | -           | 185,735     |
| J.P. Morgan Asset Management            | 3,547,930   | 3,290,690   |
| John Buck Company                       | -           | 16,091      |
| Killian Capital Management              | 334,965     | 296,157     |
| LaSalle Investment Management           | 170,213     | 306,925     |
| Lazard Asset Management, LLC            | 602,502     | 554,884     |
| LM Capital Group, LLC                   | 616,532     | 608,901     |
| Lombardia Capital                       | 44,868      | 149,214     |
| Loomis Sayles & Company, LP             | 298,909     | 811,179     |
| MacKay Shields                          | 897,458     | 861,181     |
| Mellon Capital                          | 145,469     | 92,272      |
| Mesirow Financial                       | 3,200,298   | 2,424,956   |

(continued)

**FINANCIAL SECTION****Supplementary Information (continued)****Schedules of Investment Expenses (continued)****Years Ended December 31, 2017 and 2016**

|   | <u>2017</u>         | <u>2016</u>         |
|---|---------------------|---------------------|
| <b>Investment manager expense (continued)</b> |                     |                     |
| Mondrian Investment Partners, Ltd.            | \$ 1,080,401        | \$ 929,628          |
| Muller and Monroe Asset Management            | 350,000             | 352,398             |
| NCM Capital                                   | 371,817             | 294,769             |
| New Century Investment Management             | 437,921             | 429,112             |
| Pacific Venture Group                         | -                   | 1,262               |
| Progress Investment Management                | 1,968,659           | 1,681,315           |
| Prudential Real Estate Investors              | 1,886,846           | 1,635,473           |
| RhumbLine Advisers                            | 136,749             | 79,161              |
| Russell Implementation Services, Inc.         | 154,716             | 513,381             |
| SPC Capital Management                        | 70,000              | 74,167              |
| State Street Global Advisors                  | 378,601             | 313,997             |
| The Rock Creek Group                          | 1,362,369           | 1,264,181           |
| Wells Capital Management                      | 1,026,097           | 817,731             |
| William Blair & Company                       | <u>1,169,647</u>    | <u>954,612</u>      |
|   | <u>34,422,736</u>   | <u>32,187,091</u>   |
| <b>Investment consulting fees</b>             |                     |                     |
| Callan Associates Inc.                        | 392,673             | 369,795             |
| RVK, Inc.                                     | -                   | 50,000              |
| <b>Total investment consulting fees</b>       | <u>392,673</u>      | <u>419,795</u>      |
| <b>Investment custodian fees</b>              |                     |                     |
| BNY Mellon                                    | <u>416,618</u>      | <u>305,795</u>      |
| <b>Total investment expenses</b>              | <u>\$35,232,027</u> | <u>\$32,912,681</u> |

## Additions By Source

| <u>Year Ended<br/>December 31,</u> | <u>Employer<br/>Contributions</u> | <u>Employee<br/>Contributions</u> | <u>Net Investment<br/>and Net Securities<br/>Lending<br/>Income<br/>(1)</u> | <u>Other<br/>(2)</u> | <u>Total<br/>Additions</u> |
|------------------------------------|-----------------------------------|-----------------------------------|---|----------------------|----------------------------|
| 2012                               | \$190,720,776                     | \$128,869,508                     | \$ 887,687,519  | \$10,190,689         | \$1,251,417,220            |
| 2013                               | \$187,817,644                     | \$127,593,220                     | \$1,179,440,119   | \$ 8,547,729         | \$1,503,398,712            |
| 2014                               | \$190,032,872                     | \$129,325,318                     | \$ 488,890,897  | \$ 9,742,062         | \$ 817,991,149             |
| 2015                               | \$186,832,321                     | \$137,707,719                     | \$ (21,896,696)   | \$11,457,843         | \$ 314,101,187             |
| 2016                               | \$464,268,404                     | \$139,355,592                     | \$ 629,442,470  | \$14,019,340         | \$1,247,085,806            |
| 2017                               | \$559,205,626                     | \$138,826,184                     | \$1,399,625,874   | \$23,321,813         | \$2,120,979,497            |

## Deductions By Type

| <u>Year Ended<br/>December 31,</u> | <u>Benefits</u> | <u>Refunds</u> | <u>Net<br/>Administrative<br/>Expenses</u> | <u>Total<br/>Deductions</u> |
|------------------------------------|-----------------|----------------|--|-----------------------------|
| 2012                               | \$595,339,763   | \$33,081,726   | \$4,303,353                                | \$632,724,842               |
| 2013                               | \$637,697,226   | \$29,873,030   | \$4,324,634                                | \$671,894,890               |
| 2014                               | \$682,959,960   | \$26,347,361   | \$5,010,206                                | \$714,317,527               |
| 2015                               | \$738,666,760   | \$33,273,171   | \$5,151,110                                | \$777,091,041               |
| 2016                               | \$784,046,767   | \$26,702,222   | \$5,373,555                                | \$816,122,544               |
| 2017                               | \$790,352,526   | \$32,995,364   | \$5,406,034                                | \$828,753,924               |

1 - Includes realized and unrealized net gain or loss on investments and net securities lending income.

2 - Includes employer federal subsidized programs, EGWP/Medicare Part D, prescription/repayment plan rebates and miscellaneous income. Early Retirement Reinsurance Program is included in 2012.

## Schedule of Employer Contributions Receivable

| <u>Levy Year</u> | <u>December 31, 2016</u>            |                                |                     |   |
|------------------|-------------------------------------|--------------------------------|---------------------|---|
|                  | <u>Contributions<br/>Receivable</u> | <u>Uncollected<br/>Balance</u> | <u>Reserved</u>     | <u>Net<br/>Contributions<br/>Receivable</u> |
| 2016             | \$195,653,930                       | \$ 20,052,965                  | \$ 40,650           | \$ 20,012,315                               |
| 2017             | \$208,226,206                       | 208,226,206                    | 6,461,280           | 201,764,926                                 |
|                  |                                     | <u>\$228,279,171</u>           | <u>\$ 6,501,930</u> | <u>\$221,777,241</u>                        |

Notes: Employer contributions are funded primarily through property taxes levied by Cook County, Illinois. Uncollected employer contributions for the 2015 and prior levy years are fully reserved.

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# Investment Section

*This section includes an investment report, Investment Consultant's Commentary, the Master Custodian's Certification, a summary of investment policy, and summary tables of investment data.*

# Investment Report



June 14, 2018

To the Retirement Board and Our Members:

The County Employees' and Officers' Annuity and Benefit Fund of Cook County ("the fund") employs a prudent investment strategy to meet its long-term actuarial objective of growing fund assets to support member benefits. Together with fund staff and the investment consultant, Callan Associates, the Retirement Board oversees the investment strategy through ongoing study of the portfolio structure, return assumptions, and projected funding needs to support member benefits.

In 2017, the Cook County Fund experienced a strong investment year, outperforming the custom benchmark returning 15.35%, net of investment management fees. During that period, investments earned \$1.4 billion for the Cook County Fund and grew plan assets from \$9.1 billion at the end of the previous year to more than \$10.0 billion by December 31, 2017. Strategic allocations to traditional asset classes as well as manager selection were key contributors to the positive performance.

In 2017, supplemental contributions from the employer enhanced the impact that investment earnings had on the fund's overall financial standing. While benefit payments have historically represented up to 100% of investment earnings, benefit payments represented 57% of that income in 2017. During that period, supplemental employer contributions of \$353.8 million resulting from a one-year Intergovernmental Agreement (IGA) enabled the Cook County Fund to meet benefit obligations with minimum liquidation of investment assets, which had a stabilizing effect on the long-term position of the fund.

The Cook County Fund continues to implement strategies towards policy allocation targets with the additional funding.

The Consultant's Commentary; Master Custodian's certification letter; a summary of the fund's goals, objectives, and guidelines; and selected investment schedules follow for your review.

Sincerely,

A handwritten signature in cursive script that reads "Nickol R. Hackett".

Nickol R. Hackett  
Executive Director and Chief Investment Officer

# Investment Consultant's Commentary

## Callan

Callan Associates Inc.  
120 North LaSalle Street  
Suite 2400  
Chicago, IL 60602

Main 312.346.3536  
Fax 312.346.1356

[www.callan.com](http://www.callan.com)

June 14, 2018

Board of Trustees  
County Employees' and Officers' Annuity and  
Benefit Fund of Cook County  
70 W. Madison Street, Suite 1925  
Chicago, IL 60602

Dear Trustees,

Callan Associates, Inc. is pleased to present the County Employees' and Officers' Annuity and Benefit Fund of Cook County ("Fund") results for fiscal year ended December 31, 2017. As of year-end, the Fund reported a fair value of \$10.1 billion, an increase of approximately \$1.2 billion since December 31, 2016.

The year 2017 offered a record low in volatility, more record highs in global stock markets, mixed records in global temperatures, a record number of natural disasters in the U.S. The VIX Index, a widely used measure of expected stock market volatility, fell more than 20% in 2017, reaching an all-time low in November. Stock markets hit a number of record highs, adding trillions of dollars to global market capitalization. U.S. consumer confidence remained near a 17-year high and unemployment at a 17-year low. At the same time, geopolitical concerns, domestic political drama, and other noteworthy news items littered the headlines, but had little effect on investors' complacency. Risk appetite was robust, fueling returns for traditional and non-traditional assets.

Domestic equity markets as measured by the S&P 500 Index posted their strongest return since 2013 with a +21.8% return for the year. Larger capitalization securities outperformed smaller capitalization securities by a substantial margin. Non-U.S. developed equity market investments were also robust with a +25.03% return as measured by the MSCI EAFE Index. U.S. investors were aided by a weakening dollar that added almost 10% to the annual return. Emerging markets demonstrated continued strength with a +37.28% return for the year. Fixed income markets as represented by Bloomberg Barclays Aggregate Index generated a return of +3.54% for the year. Despite largely positive economic conditions, and three Fed rate hikes, 10-year Treasury yields finished a mere 0.08% higher than where they began the year. Real Estate returns were steady once again in 2017 as the NCREIF Open End Diversified Core Equity Index (ODCE) produced a +6.66% return.

As noted in the Schedule of Investment Results, the Fund generated a total return of 15.35% net-of-fees for the year ended December 31, 2017, which exceeded the 14.40% return of the Fund's target benchmark (the Policy Benchmark). In aggregate, the Fund's non-U.S. equity, fixed income, public real estate, and hedge fund investments exceeded their benchmarks, while the Fund's domestic equity investments trailed its benchmark due in part to its smaller capitalization bias.

Sincerely,



John P. Jackson, CFA  
Senior Vice President, Callan LLC

# Master Custodian's Certification



Asset Servicing

**Michael J. Beggy**  
Vice President

June 14, 2018

To the Board of Trustees and the Executive Director of the County Employees' and Officers' Annuity & Benefit Fund of Cook County:

BNY Mellon as custodian of the County Employees' and Officers' Annuity & Benefit Fund of Cook County (the "client") has established an "Account" that holds the clients property in safekeeping facilities of the Custodian (or other custodian banks or clearing operations), provided the recordkeeping of certain property of the client and completed the annual accounting certification for the year January 1, 2017 through December 31, 2017.

In addition, in accordance with the terms of the Custody Agreement dated, November 1, 2007, BNY Mellon also provides the following services as Custodian:

- Market settlement of purchases and sales and engage in other transactions, including free receipts and deliveries, exchanges and other voluntary corporate actions, with respect to securities or property received by the Custodian
- Take actions necessary to settle transactions in futures and/or options contracts, short selling programs, foreign exchange or foreign exchange contracts, swaps and other derivative investments with third parties
- Lend the assets of the Account in accordance with a separate Securities Lending Agreement.
- Invest available cash in any collective fund, including a collective investment fund maintained by the Custodian or and affiliate of the Custodian for collective investment of employee benefit trusts or deposit in an interest bearing account of banking department of Custodian.
- Appoint subcustodians, including affiliates of the custodian, as to part or all of the Account.
- Hold property in nominee name, in bearer form or in book entry form, in a clearinghouse corporation or in a depository.
- Take all action necessary to pay for, and settle authorized transactions.
- Collect income payable to and distributions due to the Account.
- Collect all proceeds from securities, certificates of deposit or other investments which may mature or be called.
- Forward to the authorized party as designated by the client, proxies or ballots that are to be a voted by the authorized party.
- Attend to corporate actions that have no discretionary decision requirement
- Report the value of the Account as agreed upon by the client and custodian.
- Credit the account with income and maturity proceeds on securities contractual payment date.

Sincerely,

A handwritten signature in black ink that reads "Michael J. Beggy".

Michael J. Beggy  
Relationship Executive

*Asset Servicing*

Room 410 ~ One Mellon Center ~ Pittsburgh, PA 15258-0001  
(412) 234-6933 ~ (412) 236-1928 Fax

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# Summary of Investment Policy

## Overview

Under the guidance and direction of the Board and governed by the “prudent man rule,” it is the mission of the County Employees’ and Officers’ Annuity Fund of Cook County (“the Fund”) and the Investment Staff to optimize the total return of the Fund’s investment portfolio through a policy of diversified investments using parameters of prudent risk management as measured on the total portfolio, acting at all times in the exclusive interest of the participants and beneficiaries of the Fund.

To accomplish this mission, the Board and Investment Staff understand and accept their fiduciary obligations to the members of the Fund. These obligations are legal in nature and are outlined in the Illinois Pension Code [40 ILCS 5]. Investments made by the Fund shall satisfy the conditions of the Illinois Pension Code and applicable Illinois law and, in particular, the prudent man rule set forth in the Illinois Pension Code [40 ILCS 5/1-109].

Subject to these fiduciary standards, the Board and Investment Staff shall endeavor at all times to implement the Statement of Investment Policy in a manner consistent with the stated mission of the Fund, while ensuring transparency and compliance with all applicable laws and regulations.

The Policy is set forth by the Board in order to:

- Establish a clear understanding of all involved parties of the investment goals and objectives of the Fund.
- Define and assign the responsibilities of all involved parties.
- Establish the relevant investment horizon for which the Fund assets will be managed.
- Establish risk parameters governing assets of the Fund.
- Establish target asset allocation and re-balancing procedures.
- Establish a methodology and criteria for selecting, retaining and terminating Investment Professionals.
- Offer specific guidance to and define limitations for all Investment Managers regarding the investment of Fund assets.

In summary, the purpose of the Statement of Investment Policy is to formalize the Board’s investment objectives, policies and procedures and to define the duties and responsibilities of the various entities involved in the investment process. The Statement of Investment Policy is intended to serve as a guide, reference tool and communication link between the Board, Investment Staff and Investment Professionals.

## INVESTMENT SECTION

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### Summary of Investment Policy (continued)

#### Investment Objectives

The primary return objectives of the Fund are to:

- Preserve the safety of principal.
- Exceed, after investment management fees, a customized blended benchmark consistent with prudent levels of risk.
- Create a stream of investment returns to ensure the systematic and adequate funding of actuarially determined benefits through contributions and professional management of Fund assets.

To achieve these objectives, the assets of the Fund have been allocated to meet its actuarial assumed rate of return of 7.50%. To evaluate success, the Board compares the performance of the Fund to the actuarial assumed rate of return and its custom benchmark. This benchmark represents a passive implementation of the historical investment policy targets and it is re-balanced regularly.

While achieving the return objectives, the Fund is able to tolerate certain levels of risk, which are:

- To accept prudent levels of short-term and long-term volatility consistent with the near-term cash flow needs, funding level, and long-term liability structure of the Fund.
- To tolerate appropriate levels of downside risk relative to the Fund's actuarial assumed rate of return of 7.50%. In doing so, the Board will attempt to minimize the probability of underperforming the Fund's actuarial assumed rate of return over the long-term and to minimize the shortfall in the event such underperformance occurs.
- To accept certain variances in the asset allocation structure of the Fund relative to the broad financial markets and peer groups.
- To tolerate certain levels of short-term underperformance by the Fund's Investment Managers.

The investment objectives of the Fund are constrained by applicable law, time, taxes and liquidity. The Fund will operate in accordance with applicable law, as amended. The Fund has a long-term time horizon as the assets are used to pay qualified participant pension benefits. The Fund is a tax-exempt entity, but can be subject to taxes involving unrelated business taxable income ("UBTI"). UBTI is income earned by a tax-exempt entity that does not result from tax-exempt activities. The Fund will attempt to minimize or to avoid incurring UBTI. The liquidity needs of the Fund are to meet the regular cash flow requirements of the Fund.

## Asset Allocation and Rebalancing Procedures

The Board reviews the target asset allocation of the Fund at least once every three years. It will take into consideration applicable statutes, the actuarial rate of return of the Fund, the long term nature of the asset pool, the cash flow needs of the Fund and the general asset allocation structure of the Fund's peers. It will make assumptions on the capital markets over the long term and optimize the asset allocation to best meet the actuarial and cash flow needs of the Fund at prudent levels of risk.

The Board establishes the asset allocation targets and ranges and reviews them periodically. To ensure that the allocations meet the risk/return objectives of the Fund, the target allocations will be reviewed annually for reasonableness relative to significant economic market changes or changes to the long-term goals and objectives. Proper implementation of this guideline may require that a periodic adjustment or rebalancing be made to ensure conformance with asset allocation targets. Rebalancing requirements shall be reviewed on a continual basis. Rebalancing may also occur in the event of a change in the allocation percentages by asset class by the Board or as a result of extraordinary market events. Rebalancing shall take place as soon as practical after said change or amendment has been approved.

# Schedule of Investment Results

For Year Ended December 31, 2017

|                           | Annualized Returns |                |                |
|---------------------------|--------------------|----------------|----------------|
|                           | <u>2017</u>        | <u>3 Years</u> | <u>5 Years</u> |
| Total Fund                | 15.35%             | 7.40%          | 8.49%          |
| Policy Benchmark *        | 14.40%             | 7.03%          | 8.15%          |
| Domestic Equity           | 19.78%             | 10.53%         | 14.92%         |
| Russell 3000              | 21.13%             | 11.12%         | 15.58%         |
| International Equity      | 28.67%             | 9.31%          | 8.10%          |
| MSCI ACWI ex. U.S.        | 25.03%             | 7.80%          | 7.90%          |
| Fixed Income              | 4.13%              | 2.53%          | 2.20%          |
| BloomBarc Aggregate       | 3.54%              | 2.24%          | 2.10%          |
| Real Estate               | 6.11%              | 7.03%          | 9.02%          |
| NFI-ODCE Value Weight Net | 6.66%              | 9.42%          | 10.52%         |
| Private Equity            | 13.07%             | 6.95%          | 2.97%          |
| CCPF Fund Composite       | 13.71%             | 9.75%          | 9.59%          |
| Hedge Funds               | 7.06%              | 3.81%          | 5.23%          |
| Libor-3 Month+4%          | 5.26%              | 4.77%          | 4.56%          |

\*The Policy Benchmark is as follows:

- As of December 31, 2016: 32% BloomBarc Aggregate Index, 28.7% Russell 3000 Index, 20% MSCI ACWI ex. U.S. Index, 9% Libor-3 Month+ 4.0% Index, 5.7% NFI-ODCE Value Weight Net, 2.3% Private Equity and 2.3% FTSE NAREIT Equity Index.
- As of December 31, 2013: 32% Barclays Aggregate Index, 31% Russell 3000 Index, 20% MSCI ACWI ex. U.S. Index, 9% Libor-3 Month+ 4.0% Index and 8% NCREIF Total Index.
- As of December 31, 2011: 25% Barclays Aggregate Index, 38% Russell 3000 Index, 17% MSCI ACWI ex. U.S. Index, 10% BarCap Int. Gov./Credit Inter, 5% Barclays US TIPS Index, 3% S&P Global ex. U.S. <\$2B. and 2% NCREIF Total Index.

N/A - Not Available. Investments not held during that time period.

Note: Returns are calculated using geometrically-linked, time and asset-weighted returns. Returns are calculated net of investment manager fees.



# Schedule of Investment Summary and Asset Allocation

| <b>Asset Class</b>       | <b>For Year Ended December 31, 2017</b> |                         |                    | <b>For Year Ended December 31, 2016</b> |                         |                    |
|--------------------------|---|-------------------------|--------------------|---|-------------------------|--------------------|
|                          | <b>Fair Value</b>                       | <b>Percent of Total</b> | <b>Target</b>      | <b>Fair Value</b>                       | <b>Percent of Total</b> | <b>Target</b>      |
| Domestic Equity          | \$ 3,848,847,535                        | 38%                     | 33%                | \$3,072,578,245                         | 34%                     | 25%                |
| International Equity     | 2,209,023,495                           | 22%                     | 21%                | 1,707,443,965                           | 19%                     | 20%                |
| Fixed Income             | 2,178,171,106                           | 21%                     | 26%                | 2,082,274,385                           | 23%                     | 32%                |
| Real Estate              | 694,785,932                             | 7%                      | 9%                 | 633,317,276                             | 7%                      | 8%                 |
| Hedge Funds-of-Funds     | 661,759,083                             | 6%                      | 4%                 | 634,093,947                             | 7%                      | 9%                 |
| Private Equity           | 357,254,966                             | 3%                      | 6%                 | 267,153,632                             | 3%                      | 6%                 |
| Short Term Investments   | 296,147,797                             | 3%                      | 1%                 | 602,067,528                             | 7%                      | 0%                 |
| <b>Total Investments</b> | <b><u>\$10,245,989,914</u></b>          | <b><u>100%</u></b>      | <b><u>100%</u></b> | <b><u>\$8,998,928,978</u></b>           | <b><u>100%</u></b>      | <b><u>100%</u></b> |

INVESTMENT SECTION

# Schedule of Top Ten Largest Holdings - Excludes Commingled Funds

For year ended December 31, 2017

| <u>Top 10 Domestic Equity Holdings</u>       | <u>Sector</u>      | <u>Shares</u>    | <u>Fair Value</u>      | <u>% of Total</u> |
|--|--------------------|------------------|------------------------|-------------------|
| Apple Inc.                                   | Technology         | 367,498          | \$ 62,191,687          | 1.6%              |
| Microsoft Corp.                              | Technology         | 619,171          | 52,963,887             | 1.4%              |
| Amazon.com Inc.                              | Services           | 27,772           | 32,478,521             | 0.8%              |
| Bank of America Corp.                        | Financial Services | 1,058,561        | 31,248,721             | 0.8%              |
| Facebook Inc.                                | Internet           | 167,261          | 29,514,876             | 0.8%              |
| Intel Corp.                                  | Technology         | 580,566          | 26,798,927             | 0.7%              |
| Berkshire Hathaway Inc.                      | Financial Services | 128,252          | 25,422,111             | 0.7%              |
| Johnson & Johnson                            | Healthcare         | 180,479          | 25,216,526             | 0.7%              |
| JP Morgan Chase & Co.                        | Bank               | 232,825          | 24,898,306             | 0.6%              |
| Alphabet Inc.                                | Internet           | 22,517           | 23,719,408             | 0.6%              |
| <b>Total Top 10 Domestic Equity Holdings</b> |                    | <u>3,384,902</u> | <u>\$ 334,452,969</u>  | <u>8.7%</u>       |
| <b>Total Domestic Equity</b>                 |                    |                  | <u>\$3,848,847,535</u> | <u>100.0%</u>     |

| <u>Top 10 International Equity Holdings</u>       | <u>Sector</u>         | <u>Shares</u>    | <u>Fair Value</u>      | <u>% of Total</u> |
|---|-----------------------|------------------|------------------------|-------------------|
| Prudential PLC (United Kingdom)                   | Financial Services    | 777,419          | \$20,039,258           | 0.9%              |
| Roche Holding AG (Switzerland)                    | Healthcare            | 61,399           | 15,530,891             | 0.7%              |
| Tencent Holdings LTD (China)                      | Internet              | 285,000          | 14,801,786             | 0.7%              |
| Anheuser-Busch InBev SA/NV (Belgium)              | Consumer Goods        | 120,687          | 13,496,488             | 0.6%              |
| British American Tobacco PLC (UK)                 | Tobacco               | 194,246          | 13,185,612             | 0.6%              |
| Shire PLC (Ireland)                               | Biotechnology         | 240,812          | 12,704,579             | 0.6%              |
| Sampo OYJ (Finland)                               | Insurance             | 226,132          | 12,436,500             | 0.6%              |
| Diageo PLC (UK)                                   | Distillers & Vintners | 324,404          | 11,958,322             | 0.5%              |
| Nestle SA (Switzerland)                           | Consumer Goods        | 137,653          | 11,837,169             | 0.5%              |
| Samsung Electronic Co. LTD (South Korea)          | Electronics           | 4,958            | 11,800,458             | 0.5%              |
| <b>Total Top 10 International Equity Holdings</b> |                       | <u>2,372,710</u> | <u>\$ 137,791,063</u>  | <u>5.7%</u>       |
| <b>Total International Equity</b>                 |                       |                  | <u>\$2,209,023,495</u> | <u>100.0%</u>     |

## Schedule of Top Ten Largest Holdings (continued)

For year ended December 31, 2017

| <b>Top 10 Fixed Income Holdings</b>                 | <b>Sector</b>    | <b>Par</b>         | <b>Fair Value</b>      | <b>% of Total</b> |
|---|------------------|--------------------|------------------------|-------------------|
| U.S. Treasury Note 1.750% 05/15/2023                | U.S. Governments | 17,197,000         | \$ 16,773,094          | 0.8%              |
| Commitment to Purchase FNMA Pools 3.500% 01/01/2048 | U.S. Agencies    | 14,380,000         | 14,764,234             | 0.7%              |
| U.S. Treasury Note Variable Rate 04/30/2019         | U.S. Governments | 14,000,000         | 14,011,900             | 0.6%              |
| U.S. Treasury Note 2.125% 05/15/2025                | U.S. Governments | 12,205,000         | 12,018,630             | 0.6%              |
| U.S. Treasury Note 1.250% 07/31/2023                | U.S. Governments | 12,120,000         | 11,486,124             | 0.5%              |
| U.S. Treasury Note 1.125% 09/30/2021                | U.S. Governments | 11,530,000         | 11,125,066             | 0.5%              |
| Commitment to Purchase FNMA Pools 4.000% 01/01/2048 | U.S. Agencies    | 9,380,000          | 9,809,041              | 0.5%              |
| U.S. Treasury Note 1.500% 08/15/2026                | U.S. Governments | 10,525,000         | 9,792,355              | 0.4%              |
| U.S. Treasury Note 1.625% 11/15/2022                | U.S. Governments | 9,995,000          | 9,740,427              | 0.4%              |
| U.S. Treasury Note 1.375% 05/31/2021                | U.S. Governments | 8,985,000          | 8,782,838              | 0.4%              |
| <b>Total Top 10 Fixed Income Holdings</b>           |                  | <u>120,317,000</u> | <u>\$ 118,303,708</u>  | <u>5.4%</u>       |
| <b>Total Fixed Income</b>                           |                  |                    | <u>\$2,178,171,106</u> | <u>100.0%</u>     |

*A complete list of the portfolio holdings is available for review upon request.*

# Schedule of Investment Manager Fees and Assets Under Management

For year ended December 31, 2017

| <u>Asset Category</u>                               | <u>Investment<br/>Manager Fees</u> | <u>Assets Under<br/>Management</u> |
|---|------------------------------------|------------------------------------|
| <b>Global Equity</b>                                |                                    |                                    |
| Adelante Capital Management                         | \$ 449,819                         | \$ 81,128,650                      |
| Ariel Investments                                   | 509,823                            | 94,721,032                         |
| CastleArk Management                                | 1,163,677                          | 197,775,754                        |
| Channing Capital Management                         | 1,638,207                          | 273,958,622                        |
| Fortaleza Asset Management, Inc. *                  | 134,560                            |                                    |
| Franklin Templeton Investments                      | 2,174,165                          | 355,492,228                        |
| Frontier Capital Management                         | 1,241,310                          | 178,252,697                        |
| Fiduciary Management Associates                     | 801,689                            | 149,911,135                        |
| Great Lakes Advisors, Inc.                          | 449,812                            | 353,805,802                        |
| J.P. Morgan Asset Management                        | 1,322,467                          | 333,316,280                        |
| Killian Capital Management                          | 334,965                            | 232,466,824                        |
| Lazard Asset Management, LLC                        | 602,502                            | 348,244,692                        |
| Lombardia Capital Partners *                        | 44,868                             |                                    |
| Mondrian Investment Partners, Ltd.                  | 1,080,401                          | 164,169,034                        |
| Progress Investment Management                      | 1,907,109                          | 305,415,078                        |
| RhumbLine Advisers                                  | 136,749                            | 1,452,990,413                      |
| Russell Implementation Services, Inc.               | 113,063                            | 499,066,003                        |
| State Street Global Advisors                        | 378,601                            | 834,146,279                        |
| Wells Capital Management                            | 1,026,097                          | 131,437,597                        |
| William Blair & Company                             | 1,169,647                          | 183,225,044                        |
| Total Global Equity                                 | <u>16,679,531</u>                  | <u>6,169,523,174</u>               |
| <b>Fixed Income</b>                                 |                                    |                                    |
| Chicago Equity Partners *                           | 70,867                             | -                                  |
| Franklin Templeton Investments                      | 636,094                            | 214,787,328                        |
| LM Capital Group, LLC                               | 616,532                            | 410,131,344                        |
| Loomis Sayles & Company, LP *                       | 298,909                            |                                    |
| MacKay Shields                                      | 897,458                            | 351,989,516                        |
| Mellon Capital                                      | 145,469                            | 748,899,140                        |
| Piedmont Investment Advisors (Formerly NCM Capital) | 371,817                            | 225,134,932                        |
| New Century Investment Management                   | 437,921                            | 237,514,213                        |
| Progress Investment Management                      | 61,550                             | 21,904,642                         |
| Total Fixed Income                                  | <u>3,536,617</u>                   | <u>2,210,361,118</u>               |

## Schedule of Investment Manager Fees and Assets Under Management (continued)

For year ended December 31, 2017

| <u>Asset Category</u>                   | <u>Investment<br/>Manager Fees</u> | <u>Assets Under<br/>Management</u> |
|---|------------------------------------|------------------------------------|
| <b>Real Estate</b>                      |                                    |                                    |
| Angelo Gordon & Co.                     | 241,141                            | 10,128,192                         |
| Blackstone Alternative Asset Management | 450,000                            | 16,307,869                         |
| CBRE Global Investors                   | 310,106                            | 43,093,937                         |
| J.P. Morgan Asset Management            | 2,225,463                          | 262,575,288                        |
| LaSalle Investment Management           | 170,213                            | 15,912,179                         |
| Mesirow Financial                       | 568,424                            | 40,361,618                         |
| Prudential Real Estate Investors        | 1,886,846                          | 237,020,184                        |
| Russell Implementation Services, Inc.   | -                                  | 34,425,171                         |
| Total Real Estate                       | <u>5,852,193</u>                   | <u>659,824,439</u>                 |
| <b>Hedge Fund of Funds</b>              |                                    |                                    |
| Blackstone Alternative Asset Management | 4,700,188                          | 477,351,993                        |
| The Rock Creek Group                    | <u>1,362,369</u>                   | <u>184,407,090</u>                 |
| Total Hedge Funds                       | <u>6,062,557</u>                   | <u>661,759,083</u>                 |
| <b>Private Equity</b>                   |                                    |                                    |
| Legacy direct **                        | -                                  | 8,823,850                          |
| Mesirow Financial                       | 1,830,185                          | 361,842,279                        |
| Muller and Monroe Asset Management      | 350,000                            | 18,008,612                         |
| Russell Implementation Services, Inc. * | 41,653                             | -                                  |
| SPC Capital Management                  | <u>70,000</u>                      | <u>4,561,083.00</u>                |
| Total Private Equity                    | <u>2,291,838</u>                   | <u>393,235,826</u>                 |
| <b>Short Term Investments</b>           |                                    |                                    |
| BNY Mellon **                           | -                                  | 151,286,273                        |
| Total                                   | <u>\$34,422,736</u>                | <u>\$10,245,989,914</u>            |

\* These Investment Managers were terminated and/or funds were transferred to another Investment Manager in 2017, therefore there were no assets under management as of 12/31/2017.

\*\* Assets are in liquidation, therefore fees are not applicable.

# Schedule of Brokerage Commissions

For year ended December 31, 2017

| <u>Broker Name</u>                       | <u>Number of Shares</u> | <u>Commissions</u> | <u>Cost per Share</u> |
|--|-------------------------|--------------------|-----------------------|
| <b>Domestic Equity Commissions</b>       |                         |                    |                       |
| Loop Capital Markets, LLC*               | 10,721,350              | \$289,000          | \$0.027               |
| Merrill Lynch Securities                 | 4,826,685               | 114,751            | 0.024                 |
| Credit Suisse                            | 3,575,222               | 103,582            | 0.029                 |
| Goldman Sachs & Co.                      | 2,551,318               | 68,640             | 0.027                 |
| Drexel Hamilton                          | 1,836,897               | 63,941             | 0.035                 |
| Penserra Securities*                     | 1,820,421               | 49,751             | 0.027                 |
| Stiffel Nicolaus                         | 1,383,197               | 43,989             | 0.032                 |
| Williams Capital Group                   | 1,802,556               | 40,079             | 0.022                 |
| Cabrera Capital Markets                  | 1,417,891               | 35,220             | 0.025                 |
| Cheevers & Co., Inc.*                    | 1,318,703               | 35,217             | 0.027                 |
| Baird, Robert W & Co.                    | 908,297                 | 31,141             | 0.034                 |
| Pershing LLC                             | 1,325,372               | 29,782             | 0.022                 |
| William Blair & Co.                      | 960,359                 | 29,059             | 0.030                 |
| ITG Inc.                                 | 1,009,445               | 28,879             | 0.029                 |
| Ades Capital Group                       | 984,612                 | 28,710             | 0.029                 |
| Castle Oak Securities LP.                | 1,350,786               | 27,029             | 0.020                 |
| J.P. Morgan Securities                   | 1,108,724               | 26,530             | 0.024                 |
| King & Associates                        | 834,673                 | 24,134             | 0.029                 |
| RBC Capital Markets LLC                  | 780,682                 | 23,236             | 0.030                 |
| Stephens Inc.                            | 753,645                 | 22,837             | 0.030                 |
| National Financial Services              | 699,098                 | 21,414             | 0.031                 |
| Brokers with < \$20,000 of Commissions   | 8,525,897               | 232,092            | 0.027                 |
| <b>Total Domestic Equity Commissions</b> | <u>50,495,828</u>       | <u>\$1,369,015</u> | <u>\$0.027</u>        |

*\*Women/minority-owned brokerage firm. The Retirement Board's brokerage policy encourages investment manager, as they search for best possible trade execution, to utilize women/minority-owned enterprises, specifically firms headquartered in the State of Illinois.*

## Schedule of Brokerage Commissions (continued)

For year ended December 31, 2017

| <u>Broker Name</u>                      | <u>Number of Shares</u> | <u>Commissions</u> | <u>Cost per Share</u> |
|---|-------------------------|--------------------|-----------------------|
| <b>International Equity Commissions</b> |                         |                    |                       |
| Loop Capital Markets, LLC*              | 10,684,398              | \$80,666           | \$0.008               |
| Merrill Lynch Securities                | 7,123,312               | 49,395             | 0.007                 |
| HSBC Bank PLC                           | 797,924                 | 31,432             | 0.039                 |
| Goldman Sachs & Co.                     | 3,030,581               | 29,325             | 0.010                 |
| Credit Suisse                           | 1,736,312               | 25,751             | 0.015                 |
| Citigroup Global Markets, Inc.          | 2,440,877               | 23,155             | 0.009                 |
| Instinet Europe Limited                 | 2,025,209               | 21,013             | 0.010                 |
| Penserra Securities*                    | 1,729,837               | 20,875             | 0.012                 |
| UBS Securities                          | 2,622,273               | 19,256             | 0.007                 |
| Deutsche Bank Securities, Inc.          | 892,695                 | 18,773             | 0.021                 |
| J.P. Morgan Securities                  | 1,529,227               | 17,074             | 0.011                 |
| Morgan Stanley & Co.                    | 3,534,074               | 15,596             | 0.004                 |
| Goldman Sachs & Co.                     | 1,119,964               | 15,146             | 0.014                 |
| Credit Suisse                           | 927,522                 | 12,419             | 0.013                 |
| UBS Warburg Asia LTD                    | 2,470,686               | 12,330             | 0.005                 |
| Investment Technology Group LTD         | 1,577,665               | 11,566             | 0.007                 |
| RBC Dominion Security Services          | 752,340                 | 11,414             | 0.015                 |
| BNP Paribas Securities                  | 711,815                 | 11,180             | 0.016                 |
| BNY Convergenx                          | 1,397,526               | 10,409             | 0.007                 |
| Brokers with < \$10,000 of Commissions  | <u>99,429,327</u>       | <u>\$749,985</u>   | <u>\$0.008</u>        |

*\*Women/minority-owned brokerage firm. The Retirement Board's brokerage policy encourages investment manager, as they search for best possible trade execution, to utilize women/minority-owned enterprises, specifically firms headquartered in the State of Illinois.*

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An aerial, high-angle photograph of a dense city skyline, likely New York City, featuring numerous skyscrapers of varying heights and architectural styles. The city extends to a waterfront where a large body of water is visible under a sky with scattered clouds. The overall image has a light, semi-transparent overlay.

# Actuarial Section

*This section includes the actuarial reports and summarizes actuarial liability and unfunded actuarial liability. Schedules of data summarizing information about members and beneficiaries, actuarial assumptions, principal provisions, and a glossary of terms are also included.*

# Actuarial Certification - Pension Benefits



## Actuarial Certification - Pension Benefits

June 2018

Board of Trustees  
County Employees' and Officers' Annuity and Benefit Fund of Cook County  
Chicago, Illinois

## Certification of Actuarial Valuation

Ladies and Gentlemen:

This report summarizes the actuarial valuation results of the County Employees' and Officers' Annuity and Benefit Fund of Cook County ("CEABF" or "the Fund") as of December 31, 2017 performed by Conduent HR Consulting, LLC ("Conduent"), formerly Buck Consultants, LLC.

The actuary performs the valuation annually. The last valuation for the Plan was completed for the December 31, 2016 plan year. All Schedules in the report, with the exception of Section 2, were prepared by the actuary. The actuarial valuation is based on audited financial and member data provided by the CEABF staff and summarized in this report. The benefits considered are those delineated in the Plan, the CEABF was established on January 1, 1926 and is governed by legislation contained in the Illinois Compiled statutes, particularly Chapter 40, as amended and restated effective December 31, 2017. The actuary did not verify the data submitted, but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under the Plan were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable. Certain historical information with respect to costs, liabilities, assets, accounting disclosure information, etc. has been derived from the prior actuary's reports and information provided by the Plan sponsor. That information is presented for comparison purposes and Conduent has not verified the validity of any of those calculations or data. Conduent is solely responsible for the actuarial data and actuarial results presented in this report, excluding the historical information and data just described. This report fully and fairly discloses the actuarial position of the Plan.

The CEABF is funded by Employer and Member Contributions. The County levies a tax annually equal to the total amount of contributions made by the members in the calendar year 2 years prior to the year of the levy, multiplied by 1.54. This statutory methodology currently represents less than 40% of the actuarial required contribution and results in projected insolvency of CEABF by 2042. We recommend that a funding policy be legislated that is sufficient to pay the Normal Costs of active Plan members, Plan expenses, and amortize the Unfunded Actuarial Accrued Liability as a level percent of payroll (or salary) over a period no longer than 30 years.

The economic and demographic assumptions used in the valuation were adopted by the Board in consultation with Conduent. The Board's established practice is to review the experience of the

CEABF at least once every five years to determine if any changes to the valuation assumptions are warranted. The assumptions used in the valuation are based on recommendations made and approved by the Board as part of an Experience Study covering plan years from January 1, 2013 through December 31, 2016. This experience study was performed by Conduent in February, 2018 and resulted in changes in the following assumptions:

- Permanent Withdrawal from Active Status
- Retirement
- Mortality and Future Mortality Improvement
- Rate of Return
- Salary Increase
- Inflation and Payroll Growth
- Percent Married

In selecting economic assumptions, the interest rate of 7.25% (changed from 7.50% in the December 31, 2016 valuation) is based upon a review of the existing portfolio structure, a review of recent experience, and information from the Board. The salary increase assumption is based on actual experience and future expectations of inflation, merit, and productivity components. In our opinion, the actuarial assumptions used are appropriate for purposes of the valuation and are reasonably related to the experience of the CEABF and to reasonable long-term expectations. The mortality improvement assumption was selected in accordance with Actuarial Standard of Practice No. 35.

The assumptions and methods used to determine the Annual Determined Contributions (ADC) of the CEABF as outlined in this report and all supporting schedules meet the parameters and requirements for disclosure of Governmental Accounting Standards Board (GASB) Statement No. 67, Financial Reporting for Defined Benefit Pension Plans and Note Disclosures for Defined Contribution Plans. Based on member data and asset information provided by the CEABF staff, we have prepared the Schedule of Funding Progress and Schedule of Employer Contributions that are included in the Financial Section of the Comprehensive Annual Financial Report.

Because of the risk of misinterpretation of actuarial results, you should ask us to review any statement you wish to make on the results contained in this report. Conduent will accept no liability for any such statement made without our prior review.

Future actuarial measurements may differ significantly from the current measurement presented in this report due to such factors as: plan experience different from that anticipated by the economic and demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements; and changes in plan provisions or applicable law. Due to the limited scope of this report, an analysis of the potential range of such future measurements has not been performed.

We have prepared required accounting information for GASB Statement Nos. 67 and 68 for the measurement year ending December 31, 2017, based on valuation dates of December 31, 2016 and December 31, 2017.

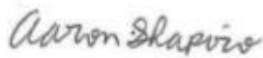
## ACTUARIAL SECTION

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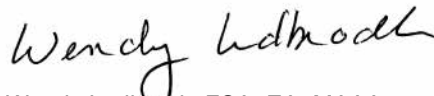
### Actuarial Certification - Pension Benefits (continued)

Aaron Shapiro is a Fellow of the Society of Actuaries, and Enrolled Actuary, and a Member of the American Academy of Actuaries and meets the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. This report has been prepared in accordance with all Applicable Actuarial Standards of Practice. He is available to answer any questions on the material contained in the report, or to provide explanations or further details as may be appropriate.

Respectfully submitted,



Aaron Shapiro, FSA, EA, MAAA  
Principal, Wealth Consulting  
Conduent



Wendy Ludbrook, FSA, EA, MAAA  
Sr. Consultant, Wealth Consulting

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# Actuarial Valuation - Pension Benefits

## Overview

The County Employees' and Officers' Annuity and Benefit Fund of Cook County ("CEABF" or "the Fund") provides pension and ancillary benefit payments to the active, retired and separated employees of Cook County. A Retirement Board comprised of retiree, employee, and appointed representatives is responsible for administering the Plan and providing oversight of the investment policy. This report presents the results of the actuarial valuation of the Plan benefits as of the valuation date of December 31, 2017.

## Purpose

An actuarial valuation is performed on the Plan annually as of the end of the fiscal year. The main purposes of the actuarial valuation detailed in this report are:

1. To determine the employer contribution necessary to fund the CEABF in an actuarially sound manner;
2. To disclose the funding assets and liability measures as of the valuation date;
3. To disclose the accounting measures for the Plan required by GASB No. 67 as of the end of the last fiscal year;
4. To review the current funded status of the Plan;
5. To compare actual and expected experience under the Plan during the last fiscal year;
6. And to report trends in contributions, assets, liabilities, and funded status over the last several years.

Because of the risk of misinterpretation of actuarial results, you should ask us to review any statement you wish to make on the results contained in this report. Conduent will accept no liability for any such statement made without our prior review. This actuarial valuation provides a "snapshot" of the funded position of the Plan based on the Plan provisions, membership, assets, and actuarial assumptions as of the valuation date.

## Membership

**Actives:** As of December 31, 2017, there were 20,349 employees in active service (including 149 on disability) covered under the provisions of the Plan. The significant age, service, salary and accumulated contribution information for these employees is summarized below, along with comparative figures from the last actuarial valuation one year earlier.

|                                   | <u>December 31, 2017</u> | <u>December 31, 2016</u> |
|-----------------------------------|--------------------------|--------------------------|
| Number of active employees        | 20,349                   | 20,969                   |
| Average age                       | 47.7                     | 47.4                     |
| Average years of service          | 14.0                     | 13.8                     |
| Total annual salary               | \$1,567,480,401          | \$1,580,251,254          |
| Average annual salary             | <u>\$ 77,030</u>         | <u>\$ 75,361</u>         |
| Total accumulated contributions   | \$1,808,931,624          | \$1,790,559,652          |
| Average accumulated contributions | \$ 88,895                | \$ 85,391                |

The number of active members decreased by 3.0% from the previous valuation date. The average age and service of the active members increased by 0.3 years and 0.2 years, respectively. The total annual valuation salary decreased by 0.8%. The average salary increased by 2.2% from the previous valuation.

**Disabilities:** There were 149 disabled members (included in the active data). There were 171 disabilities in the prior year.

**Retirees and Beneficiaries:** In addition to the active members, there were 15,488 retired members and 2,729 beneficiaries who are receiving monthly benefit payments on the valuation date. The significant age and annual benefit information for these members are summarized below with comparative figures from the last actuarial valuation performed one year earlier.

|                                      | <u>December 31, 2017</u> | <u>December 31, 2016</u> |
|--------------------------------------|--------------------------|--------------------------|
| Number of members receiving payments |                          |                          |
| Retirees                             | 15,488                   | 15,222                   |
| Beneficiaries                        | 2,729                    | 2,687                    |
| Total                                | 18,217                   | 17,909                   |
| Average age                          | 72.1                     | 71.9                     |
| Annual benefit amounts               |                          |                          |
| Retirees                             | \$ 683,091,342           | \$ 646,002,778           |
| Beneficiaries                        | \$ 53,518,720            | \$ 49,174,371            |
| Total                                | \$ 736,610,062           | \$ 695,177,149           |
| Average annual benefit payments      | \$ 40,435                | \$ 38,817                |

The number of retired members and beneficiaries increased by 1.7% from the previous valuation date. The average age of the retired members increased by 0.2 years. The total annual benefit payments for these members increased by 6.0% from the previous valuation date.

## ACTUARIAL SECTION

### Actuarial Valuation - Pension Benefits (continued)

#### Membership (continued)

*Inactives:* In addition to the active and retired members, there were 14,624 inactive members who did not elect to receive their accumulated contributions when they left covered employment. The age information for these inactive members is summarized below with comparative figures from the last actuarial valuation one year earlier.

|                            | <u>December 31, 2017</u> | <u>December 31, 2016</u> |
|----------------------------|--------------------------|--------------------------|
| Number of inactive members | 14,624                   | 14,005                   |
| Average age                | 48.1                     | 47.6                     |

The number of inactive members increased by 4.4% from the previous valuation. The average age of the inactive members increased by 0.5 years.

In our opinion, the membership data collected and prepared for use in this actuarial valuation meets the data quality standards required under Actuarial Standards of Practice No. 23.

#### Plan Assets

The Plan's assets are held in trust and invested for the exclusive benefit of Plan members. The trust is funded by member and employer contributions, and pays benefits directly to eligible members in accordance with Plan provisions. The assets are audited annually and are reported at fair value. On a fair value basis, the Plan has a Net Position Available for Benefits of \$10.41 billion as of December 31, 2017. This includes an increase of \$1.3 billion over the Net Position Available for Benefits of \$9.12 billion as of December 31, 2016. During 2016, the fair value of assets experienced an investment rate of return of 15.4%, as reported by the investment consultant.

In order to reduce the volatility investment gains and losses can have on the Plan's actuarially required contribution and funded status, the Board has adopted a five-year smoothing method to determine the actuarial value of assets used for funding purposes. This method recognizes gains and losses, i.e. the difference between actual investment return during the year and the expected return based on the valuation interest rate, on a level basis over a five year period. In our opinion, this method complies with Actuarial Standards of Practice No. 44.

As of December 31, 2017, the assets available for benefits on an actuarial value basis were \$10.1 billion. This includes an increase of \$660.0 million over the actuarial value of assets of \$9.5 billion as of December 31, 2016. During 2017, the actuarial value of assets experienced an actuarial rate of return of 8.1% which is based on a five-year averaging of investment returns.



## Actuarial Experience

Differences between the expected experience based on the actuarial assumptions and the actual experience create changes in the actuarial accrued liability, actuarial value of assets, and the unfunded actuarial accrued liability from one year to the next. These changes create an actuarial gain if the experience is favorable and an actuarial loss if the experience is unfavorable. The Plan experienced a total net actuarial gain of \$223.4 million during the prior year. This net gain is about 1.4% of the Plan's prior year actuarial accrued liability. The net gain is a combination of two principal factors, demographic experience and investment performance under actuarial smoothing. Below is a more detailed discussion.

The demographic experience tracks actual changes in the Plan's population compared to the assumptions for decrements such as mortality, turnover, and retirement, as well as pay increases. The Plan experienced a demographic gain of \$163.6 million during the year ending December 31, 2017. This gain decreased the unfunded actuarial accrued liability by \$163.6 million and increased the funded ratio by 0.7%.

There were 18,841 active members who were also reported active in the December 31, 2016 actuarial valuation. The total salary for this group increased by 3.4%, which was lower than the 4.2% increase we expected for the group.

Continued tracking of the demographic experience is warranted in order to confirm the appropriateness of the actuarial assumptions. Details of the demographic, economic, and other assumptions used to value the Plan liabilities and normal cost can be found in Section 5. In our opinion, the economic assumptions comply with Actuarial Standards of Practice No. 27 and the demographic assumptions comply with Actuarial Standards of Practice No. 35.

On the asset side, the rate of return on the fair value of assets for the year ending December 31, 2017 was reported to be 15.4%, which was higher than the assumed rate of 7.5%.

The rate of return on the actuarial value of Plan assets for the year ending December 31, 2017 was approximately 8.1% compared to the assumption of 7.5%, resulting in an asset gain of \$60.0 million. The actuarial value of assets also recognizes deferred portions of prior years' gains and losses on fair value. The investment gain recognized this year is primarily due to the investment gain in 2017. The actuarial value of the assets recognizes only 20% of the 2017 unexpected change in fair value, delaying the recognition of the remaining 80% over the next four years. The gain, based on the actuarial methodology, decreased the unfunded actuarial accrued liability by \$60.0 million and increased the funded ratio by 0.4%. It should be noted that the Plan's assumed asset return of 7.5% is a long-term rate and short-term performance is not necessarily indicative of expected long-term future returns. Further, this rate was lowered to 7.25% beginning with the December 31, 2017 valuation.

## ACTUARIAL SECTION

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### Actuarial Valuation - Pension Benefits (continued)

#### Actuarial Contributions

The current contribution mechanism is not sufficient to fund the CEABF in an actuarially sound manner. The County levies a tax annually equal to the total amount of contributions made by the members in the calendar year 2 years prior to the year of the levy, multiplied by 1.54. This funding policy is insufficient to meet the needs of the CEABF. We project that the CEABF will become insolvent in 2042. **We recommend that a funding policy be legislated that is sufficient to pay the Normal Costs of active Plan members, Plan expenses, and amortize the unfunded actuarial accrued liability as a level dollar amount over a period no longer than 30 years.** We summarize those costs in the next paragraph.

The normal cost represents the cost of the benefits that accrue during the year for active members under the Entry Age Actuarial Cost Method. It is determined as a level percentage of pay which, if paid from entry age to the assumed retirement age, assuming all the actuarial assumptions are exactly met by experience, would accumulate to a fund sufficient to pay all benefits provided by the Plan. The expected member contributions are subtracted from this amount to determine the employer normal cost. The employer normal cost for 2018 has been determined to be \$98.1 million, or 6.3% of pay.

The cost method also determines the actuarial accrued liability which represents the value of all accumulated past normal cost payments. This amount is compared to the actuarial value of assets to determine if the Plan is ahead or behind in funding as of the valuation date. The difference between the total actuarial accrued liability and the actuarial value of assets equals the amount of unfunded actuarial accrued liability or surplus (if negative) on the valuation date. This amount is amortized and added to the employer normal cost to determine the annual actuarially required employer contribution for the year.

The unfunded actuarial accrued liability as of December 31, 2017 is \$5.52 billion. This represents a decrease of \$445.0 million in the unfunded actuarial accrued liability from last year's amount of \$5.97 billion. The annual payment required to amortize the unfunded actuarial accrued liability of \$5.52 billion as of December 31, 2017 is \$425.5 million, or 27.2% of pay.

The annual actuarially required employer contribution for 2018 is \$523.6 million, or 33.4% of pay. This represents a decrease of \$39.2 million in the employer contribution amount of \$562.8 million for 2017, or a 2.2% of pay decrease from last year's employer contribution rate of 35.6%.

## Funded Status

The funded status is a measure of the progress that has been made in funding the Plan as of the valuation date. It is determined as a ratio of the actuarial value of assets divided by the total actuarial accrued liability on the valuation date. A ratio of over 100% represents a Plan that is ahead in funding, and a ratio of less than 100% represents a Plan that is behind in funding on the valuation date.

As of December 31, 2017, the funded ratio of the Plan is 64.8%. This represents an increase of 3.4% from last year's funded ratio of 61.4% as of December 31, 2016.

Where presented, references to "funded ratio" and "unfunded accrued liability" are typically measured on an actuarial value of assets basis. It should be noted that the same measurements using market value of assets would result in different funded ratios and unfunded accrued liabilities. Moreover, the funded ratio presented is appropriate for evaluating the need and level of future contributions but makes no assessment regarding the funded status of the plan if the plan were to settle (i.e. purchase annuities) for a portion or all of its liabilities.

## Accounting Information

The Governmental Accounting Standards Board (GASB) issues statements which establish financial reporting standards for defined benefit pension Plans and accounting for the pension expenditures and expenses for governmental employers.

## Changes in Plan Provisions

There were no changes in benefits or other Plan provisions considered in this actuarial valuation since the last valuation performed as of December 31, 2016.

## Changes in Actuarial Assumptions, Methods, or Procedures

The assumptions used in this valuation were updated from those used in the December 31, 2016 valuation based on recommendations made and approved by the Board as part of an Experience Study covering plan years from January 1, 2013 through December 31, 2016. This experience study was performed by Conduent in February, 2018 and resulted in changes in the following assumptions:

|   |                 |  |
|---|-----------------|--|
| Permanent Withdrawal from Active Status | Retirement      | Mortality and Future Mortality Improvement |
| Inflation and Payroll Growth            | Salary Increase | Rate of Return                             |
| Percent Married                         |                 |  |

The new assumptions decreased the liability of the plan by \$239.1M as of December 31, 2017.

## ACTUARIAL SECTION

### Actuarial Valuation - Pension Benefits (continued)

#### Comparative Summary of Key Actuarial Valuation Results

|   | Actuarial Valuation as of       |                                 |
|---|---------------------------------|---------------------------------|
|   | <u>December 31, 2017</u>        | <u>December 31, 2016</u>        |
| <b>Summary of Member Data</b>   |                                 |                                 |
| Number of Members Included in the Valuation                           |                                 |                                 |
| Active Members  | 20,349                          | 20,969                          |
| Retirees and Beneficiaries  | 18,217                          | 17,909                          |
| Inactive Members  | <u>14,624</u>                   | <u>14,005</u>                   |
| Total   | 53,190                          | 52,883                          |
| Annual Payroll  |                                 |                                 |
| Average (actual)  | \$77,030                        | \$75,361                        |
| Annual Benefit Payments   |                                 |                                 |
| Retirees and Beneficiaries (Average) <sup>1</sup>                     | \$40,435                        | \$38,817                        |
| <b>Investment Returns</b>   |                                 |                                 |
| Fair Value - Rate of Return (net of investment expenses) <sup>2</sup> | 15.4%                           | 7.7%                            |
| Actuarial Value - Rate of Return                                      | 8.1%                            | 7.3%                            |
| <b>Summary of Assets and Liabilities</b>                              |                                 |                                 |
| Total Actuarial Accrued Liability                                     | \$15,671,756,443                | \$15,456,773,985                |
| Actuarial Value of Assets   | <u>\$10,148,203,834</u>         | <u>\$ 9,488,223,349</u>         |
| Unfunded Actuarial Accrued Liability                                  | \$ 5,523,552,609                | \$ 5,968,550,636                |
| Funded Ratio  | 64.75%                          | 61.39%                          |
| <b>Employer Actuarial Required Contribution</b>                       |                                 |                                 |
| <b>Fiscal Year Ending</b>   | <b><u>December 31, 2019</u></b> | <b><u>December 31, 2018</u></b> |
| Employer Normal Cost  | \$ 98,121,245                   | \$ 92,709,250                   |
| Amortization of Unfunded Actuarial Accrued Liability (Surplus)        | <u>\$ 425,504,720</u>           | <u>\$ 470,106,566</u>           |
| Employer Actuarial Required Contribution                              | \$ 523,625,965                  | \$ 562,815,816                  |

<sup>1</sup> The average annual benefit payments for retirees only is \$44,105 as of December 31, 2017 and \$42,439 as of December 31, 2016

<sup>2</sup> Rate of return determined by the investment consultant.

**Actuarial Liabilities and Normal Cost**

For the Fiscal Year ending December 31, 2017

| <b>Actuarial Liabilities</b>                                 | <b><u>Totals</u></b> |
|--|----------------------|
| 1. Present Value of Projected Benefits<br>for Active Members |                      |
| Retirement Benefits  | \$ 7,665,746,731     |
| Withdrawal Benefits  | 355,012,296          |
| Death Benefits   | <u>86,593,668</u>    |
| Total  | 8,107,352,695        |
| 2. Retired Members and Beneficiaries Receiving Benefits      | 8,583,373,041        |
| 3. Inactive Members with Deferred Benefits                   | <u>536,355,401</u>   |
| 4. Total Present Value of Projected Benefits (1. + 2. + 3.)  | 17,227,081,137       |
| 5. Present Value of Future Normal Costs                      | <u>1,555,324,696</u> |
| 6. Total Actuarial Accrued Liability                         | \$ 15,671,756,441    |

| <b>Normal Cost</b>                | <b><u>Totals</u></b> | <b><u>% of Pay</u></b> |
|-----------------------------------|----------------------|------------------------|
| 1. Active Members                 |                      |                        |
| a. Retirement Benefits            | \$ 179,876,505       | 11.48%                 |
| b. Withdrawal Benefits            | 38,410,978           | 2.45%                  |
| c. Duty Disability Benefits       | 0                    | 0.00%                  |
| d. Ordinary Disability Benefits   | 4,556,041            | 0.29%                  |
| e. Death Benefits                 | 3,054,096            | 0.19%                  |
| f. Administrative Expenses        | <u>5,676,336</u>     | <u>0.36%</u>           |
| 2. Total Normal Cost              | 231,573,956          | 14.77%                 |
| 3. Expected Member Contribution   | <u>133,452,711</u>   | <u>8.51%</u>           |
| 4. Employer Normal Cost (1. - 2.) | \$ 98,121,245        | 6.26%                  |

## ACTUARIAL SECTION

### Actuarial Valuation - Pension Benefits (continued)

#### Actuarial Contributions\*

| Valuation Date   | Fiscal Year Ending December 31, |                      |
|--|---------------------------------|----------------------|
|  | <u>2017</u>                     | <u>2016</u>          |
| 1. Valuation Payroll                                       | \$ 1,567,480,401                | \$ 1,580,251,254     |
| 2. Total Actuarial Accrued Liability                       |                                 |                      |
| a. Active Members  |                                 |                      |
| i. Retirement Benefits                                     | 6,320,251,408                   | 6,297,813,881        |
| ii. Withdrawal Benefits                                    | 167,463,162                     | 161,814,058          |
| iii. Death Benefits  | 64,313,431                      | 117,779,170          |
| iv. Total  | <u>6,552,028,001</u>            | <u>6,577,407,109</u> |
| b. Retired Members and Beneficiaries Receiving Benefits    | 8,583,373,041                   | 8,305,339,574        |
| c. Inactive Members with Deferred Benefits                 | <u>536,355,401</u>              | <u>574,027,302</u>   |
| d. Total (2.a.iv. + 2.b. + 2.c.)                           | 15,671,756,443                  | 15,456,773,985       |
| 3. Actuarial Value of Assets                               | 10,148,203,834                  | 9,488,223,349        |
| 4. Unfunded Actuarial Accrued Liability (UAAL) (2.d. - 3.) | 5,523,552,609                   | 5,968,550,636        |
| 5. Funded Ratio (3. / 2.d.)                                | 64.75%                          | 61.39%               |
| 6. UAAL as a Percent of Annual Payroll (4. / 1.)           | 352.38%                         | 377.70%              |

| Development of Employer Contribution        | Fiscal Year Ending December 31, |             |
|---|---------------------------------|-------------|
|   | <u>2019</u>                     | <u>2018</u> |
| 7. Amortization Payment for UAAL            |                                 |             |
| a. Amount                                   | 425,504,720                     | 470,106,566 |
| b. As a % of pay                            | 27.15%                          | 29.75%      |
| 8. Employer Normal Cost                     |                                 |             |
| a. Amount                                   | 98,121,245                      | 92,709,250  |
| b. As a % of pay                            | 6.26%                           | 5.87%       |
| 9. Employer Actuarial Required Contribution |                                 |             |
| a. Amount                                   | 523,625,965                     | 562,815,816 |
| b. As a % of pay                            | 33.41%                          | 35.62%      |
| 10. Funding Period (years)                  | 30                              | 30          |

\* The contribution rates above are amounts needed to fund the CEABF in an actuarially responsible manner.

## Actuarial (Gain)/Loss

| Development of Actuarial (Gain) / Loss   | <u>Amount</u>         |
|--|-----------------------|
| 1. Expected Actuarial Accrued Liability  |                       |
| a. Actuarial Accrued Liability at December 31, 2016  | \$15,456,773,985      |
| b. Normal Cost at December 31, 2016  | 227,245,711           |
| c. Interest on a. + b. to End of Year  | 1,176,301,477         |
| d. Benefit Payments and Refunds, with Interest to End of Year  | <u>785,839,435</u>    |
| e. Expected Actuarial Accrued Liability Before Changes<br>(a. + b. + c. - d.)                            | 16,074,481,738        |
| f. Change in Actuarial Accrued Liability at December 31, 2017,<br>Due to Change in Actuarial Assumptions | (239,085,312)         |
| g. Change in Actuarial Accrued Liability at December 31, 2017,<br>Due to Change in Actuarial Methods     | <u>0</u>              |
| h. Expected Actuarial Value of Assets at December 31, 2017<br>(e. + f. + g.)                             | 15,835,396,426        |
| 2. Actuarial Accrued Liability at December 31, 2017  | <u>15,671,756,443</u> |
| 3. Liability (Gain) / Loss (2. - 1.h.)   | (163,639,983)         |
| 4. Expected Actuarial Value of Assets  |                       |
| a. Actuarial Value of Assets at December 31, 2016  | 9,488,223,349         |
| b. Interest on a. to End of Year   | 711,616,751           |
| c. Contributions Made for December 31, 2017  | 655,936,587           |
| d. Interest on c. to End of Year   | 24,152,942            |
| e. Benefit Payments and Administrative Expenses<br>with Interest to End of Year                          | 791,444,531           |
| f. Change in Actuarial Value of Assets at December 31, 2017<br>due to Change in Method                   | <u>0</u>              |
| g. Expected Actuarial Value of Assets at December 31, 2017<br>(a. + b. + c. + d. - e. - f.)              | 10,088,485,098        |
| 5. Actuarial Value of Assets as of December 31, 2017   | <u>10,148,203,834</u> |
| 6. Actuarial Asset (Gain) / Loss (4.g. - 5.)   | <u>(59,718,736)</u>   |
| 7. Actuarial (Gain) / Loss (3. + 6.)   | \$ (223,358,719)      |

## ACTUARIAL SECTION

### Actuarial Valuation - Pension Benefits (continued)

## Analysis of Experience

### Analysis of Actuarial (Gains) and Losses Resulting From Differences Between Assumed Experience and Actual Experience

| Type of (Gain) or Loss   | Year End<br>December 31, 2017 | As % of<br>Last Year's AAL |
|--|-------------------------------|----------------------------|
| 1. COLA Experience   | \$ 0                          | 0.00%                      |
| 2. Salary Experience   | (78,486,650)                  | -0.51%                     |
| 3. Investment Experience   | (59,718,736)                  | -0.39%                     |
| 4. Retiree Mortality Experience  | (47,993,107)                  | -0.31%                     |
| 5. Other (turnover, retirement ages, service purchase, etc.)               | <u>(37,160,226)</u>           | <u>-0.24%</u>              |
| 6. (Gain) or Loss During Year From Experience,<br>(1. + 2. + 3. + 4. + 5.) | (223,358,719)                 | -1.45%                     |
| 7. Assumption and Method Changes   | <u>(239,085,312)</u>          | <u>-1.55%</u>              |
| 8. Total (Gain) or Loss During Year (6. + 7.)                              | <u>\$(462,444,031)</u>        | <u>-2.99%</u>              |

## Actuarial Balance Sheet

| Financial Resources                               | December 31, 2017       |
|---|-------------------------|
| 1. Actuarial Value of Assets                      | \$10,148,203,834        |
| 2. Present Value of Future Contributions          |                         |
| a. Expected Member Contributions                  | 896,311,058             |
| b. Employer Normal Cost                           | <u>659,013,638</u>      |
| c. Total  | 1,555,324,695           |
| 3. Unfunded Actuarial Accrued Liability/(Reserve) | <u>5,523,552,609</u>    |
| 4. Total Assets (1. + 2.c. + 3.)                  | <u>\$17,227,081,138</u> |
| <b>Benefit Obligations</b>                        |                         |
| 1. Present Value of Future Benefits               |                         |
| a. Active Members                                 | 8,107,352,695           |
| b. Retirees and Beneficiaries                     | 8,583,373,041           |
| c. Inactive Members                               | <u>536,355,401</u>      |
| d. Total  | <u>\$17,227,081,137</u> |



## History of UAAL and Funded Ratio

| <b>Valuation Date</b>          | <b>Actuarial<br/>Accrued<br/>Liability (AAL)</b> | <b>Actuarial<br/>Value<br/>of Assets (AVA)</b> | <b>Funded Ratio<br/>(AVA as a % of AAL)</b> | <b>Unfunded<br/>Actuarial<br/>Accrued Liability (UAAL)</b> |
|--------------------------------|--|--|---|--|
| December 31, 2008 <sup>1</sup> | \$10,097,027,865                                 | \$8,036,074,797                                | 79.59%                                      | \$2,060,953,068  |
| 2009 <sup>1</sup>              | 11,489,081,298                                   | 7,945,567,096                                  | 69.16%                                      | 3,543,514,202  |
| 2010 <sup>1</sup>              | 12,023,222,885                                   | 7,982,368,659                                  | 66.39%                                      | 4,040,854,226  |
| 2011 <sup>1</sup>              | 12,628,274,561                                   | 7,897,102,116                                  | 62.54%                                      | 4,731,172,445  |
| 2012 <sup>1</sup>              | 13,418,486,943                                   | 7,833,882,926                                  | 58.38%                                      | 5,584,604,017  |
| 2013 <sup>1</sup>              | 13,636,576,177                                   | 8,381,444,287                                  | 61.46%                                      | 5,255,131,890  |
| 2014 <sup>1</sup>              | 14,140,547,353                                   | 8,810,509,070                                  | 62.31%                                      | 5,330,038,283  |
| 2015 <sup>1</sup>              | 14,936,591,336                                   | 8,991,018,918                                  | 60.19%                                      | 5,945,572,418  |
| 2016 <sup>1</sup>              | 15,456,773,985                                   | 9,488,223,349                                  | 61.39%                                      | 5,968,550,636  |
| 2017 <sup>1</sup>              | 15,671,756,443                                   | 10,148,203,834                                 | 64.75%                                      | 5,523,552,609  |

<sup>1</sup> Pension benefits only

## Reconciliation of Change in Unfunded Actuarial Liability

| <b>Development of Unfunded Actuarial Liability</b>  | <b>Amount</b>   |
|---|-----------------|
| 1. Unfunded Actuarial Accrued Liability as of December 31, 2016   | \$5,968,550,636 |
| 2. Employer Contribution Requirement of Normal Cost Plus Interest<br>on Unfunded Liability for Period January 1, 2017 to December 31, 2017                | 547,303,741     |
| 3. Actual Employer Contribution for the Year, Plus Interest*  | 530,594,714     |
| 4. Increase in Unfunded Liability Due to Employer Contribution Plus<br>Interest Being Less Than Normal Cost Plus Interest on Unfunded Liability (2. - 3.) | 16,709,027      |
| 5. Increase/(Decrease) in Unfunded Liability<br>Due to Investment Return Lower/(Higher) Than Assumed  | (59,718,736)    |
| 6. Increase/(Decrease) in Unfunded Liability<br>Due to Salary Increases Higher/(Lower) Than Assumed   | (78,486,650)    |
| 7. Increase/(Decrease) in Unfunded Liability Due to Assumption Changes  | (239,085,312)   |
| 8. Increase/(Decrease) in Unfunded Liability Due to Other Sources   | (84,416,356)    |
| 9. Net Increase/(Decrease) in Unfunded Liability for the Year (4. + 5a. + 5b. + 5c. + 5d.)  | (444,998,027)   |
| 10. Unfunded Actuarial Liability as of December 31, 2017 (1.+ 6.)   | \$5,523,552,609 |

## ACTUARIAL SECTION

### Actuarial Valuation - Pension Benefits (continued)

#### Summary of Fair Value of Assets

| Asset Category   | Fair Value as of December 31, |               |                        |               |
|--|-------------------------------|---------------|------------------------|---------------|
|  | 2017                          |               | 2016                   |               |
|  | <u>Amount</u>                 | <u>%</u>      | <u>Amount</u>          | <u>%</u>      |
| <b>1. Short-Term Investments</b>                             | \$ 296,147,797                | 2.58%         | \$ 602,067,528         | 5.98%         |
| <b>2. Investments at Fair Value</b>                          |                               |               |                        |               |
| a. U.S. and International Equities                           | 5,840,815,927                 | 50.94%        | 4,264,200,142          | 42.33%        |
| b. U.S. Government and Government Agency Obligations         | 1,042,879,014                 | 9.10%         | 1,026,986,177          | 10.20%        |
| c. Corporate Bonds   | 892,437,094                   | 7.78%         | 822,348,141            | 8.16%         |
| d. Collective International Equity Fund                      | 77,439,593                    | 0.68%         | 67,885,886             | 0.67%         |
| e. Commingled Fixed Income Fund                              | 28,067,670                    | 0.24%         | 26,821,800             | 0.27%         |
| f. Exchange Traded Funds                                     | 172,932,810                   | 1.51%         | 483,639,898            | 4.80%         |
| g. Private Equities  | 572,042,294                   | 4.99%         | 473,271,899            | 4.70%         |
| h. Hedge Funds   | 661,759,083                   | 5.77%         | 634,093,947            | 6.29%         |
| i. Real Estate   | 661,468,632                   | 5.77%         | 597,613,560            | 5.93%         |
| j. Total   | <u>\$9,949,842,117</u>        | <u>86.78%</u> | <u>\$8,396,861,450</u> | <u>83.36%</u> |
| <b>3. Collateral Held for Securities Lending</b>             | <u>1,218,975,757</u>          | <u>10.63%</u> | <u>1,074,265,161</u>   | <u>10.66%</u> |
| <b>4. Total Assets (1. + 2.j. + 3.)</b>                      | 11,464,965,671                | 100.00%       | 10,073,194,139         | 100.00%       |
| <b>5. Receivables</b>  |                               |               |                        |               |
| a. Interest and Dividends                                    | 22,764,522                    |               | 20,362,677             |               |
| b. Investments Sold  | 42,988,417                    |               | 97,101,028             |               |
| c. Other Receivables   | <u>225,805,692</u>            |               | <u>206,095,300</u>     |               |
| d. Total   | 291,558,631                   |               | 323,559,005            |               |
| <b>6. Payables</b>   |                               |               |                        |               |
| a. Investments Purchased                                     | 122,561,858                   |               | 200,737,894            |               |
| b. Securities Lending Collateral                             | 1,218,975,757                 |               | 1,074,265,161          |               |
| c. Other Payables  | <u>7,103,244</u>              |               | <u>6,092,219</u>       |               |
| d. Total   | <u>\$1,348,640,859</u>        |               | <u>\$1,281,095,274</u> |               |
| <b>7. Net Assets for Pension Benefits (4. + 5.d. – 6.d.)</b> | <b>\$10,407,883,443</b>       |               | <b>\$9,115,657,870</b> |               |

## Changes in Fair Value of Assets

### Transactions

|   | <u>December 31, 2017</u>    | <u>December 31, 2016</u>    |
|---|-----------------------------|-----------------------------|
| <i>Additions</i>  |                             |                             |
| <b>1. Contributions</b>                                 |                             |                             |
| a. Contributions from Employers                         | \$ 511,750,985              | \$ 414,703,155              |
| b. Contributions from Plan Members                      | 138,826,184                 | 139,355,592                 |
| c. Total  | <u>650,577,169</u>          | <u>554,058,747</u>          |
| <b>2. Net Investment Income</b>                         |                             |                             |
| a. Interest and Dividends                               | 181,099,555                 | 171,993,068                 |
| b. Net Appreciation (Depreciation)                      | 1,248,856,354               | 484,767,317                 |
| c. Net Securities Lending Income                        | 4,901,992                   | 5,594,766                   |
| d. Total  | <u>1,434,857,901</u>        | <u>662,355,151</u>          |
| e. Less Investment Expense                              | <u>35,232,027</u>           | <u>32,912,681</u>           |
| f. Net Investment Income                                | 1,399,625,874               | 629,442,470                 |
| g. Miscellaneous  | 5,305,161                   | 3,912,159                   |
| h. Employee Transfers                                   | 54,257                      | 133,999                     |
| <b>3. Total Additions</b>                               | <b><u>2,055,562,461</u></b> | <b><u>1,187,547,375</u></b> |
| <i>Deductions</i>                                       |                             |                             |
| <b>4. Benefits and Expenses</b>                         |                             |                             |
| a. Retirement Benefits                                  | 724,935,490                 | 682,858,003                 |
| b. Refund of Contributions                              | 32,995,364                  | 26,702,222                  |
| c. Administrative Expenses                              | 5,406,034                   | 5,373,555                   |
| d. Employee Transfers                                   | 0                           | 0                           |
| <b>5. Total Deductions</b>                              | <b><u>763,336,888</u></b>   | <b><u>714,933,780</u></b>   |
| <b>6. Net Increase (Decrease)</b>                       | <b><u>1,292,225,573</u></b> | <b><u>472,613,595</u></b>   |
| <b>7. Net Assets Held in Trust for Pension Benefits</b> |                             |                             |
| a. Beginning of Year                                    | <u>9,115,657,870</u>        | <u>8,643,044,275</u>        |
| b. End of Year  | <b>\$10,407,883,443</b>     | <b>\$9,115,657,870</b>      |

**ACTUARIAL SECTION**

**Actuarial Valuation - Pension Benefits (continued)**

**Actuarial Value of Assets**

| <b>Development of Actuarial Value of Assets</b>   | <b><u>Amount</u></b> |                     |                     |
|---|----------------------|---------------------|---------------------|
| 1. Actuarial Value of Assets as of December 31, 2016  | \$ 9,488,223,349     |                     |                     |
| 2. Unrecognized Return as of December 31, 2016  | (372,565,479)        |                     |                     |
| 3. Fair Value of Assets as of December 31, 2016 (1.+ 2.)  | <u>9,115,657,870</u> |                     |                     |
| 4. Contributions  |                      |                     |                     |
| a. Member (includes purchased service)  | 138,826,184          |                     |                     |
| b. Employer   | 511,750,985          |                     |                     |
| c. Miscellaneous contributions  | 5,359,418            |                     |                     |
| d. Total  | <u>655,936,587</u>   |                     |                     |
| 5. Distributions  |                      |                     |                     |
| a. Benefit payments   | 724,935,490          |                     |                     |
| b. Refund of contributions  | 32,995,364           |                     |                     |
| c. Administrative expenses  | 5,406,034            |                     |                     |
| d. Total  | <u>763,336,888</u>   |                     |                     |
| 6. Expected Return at 7.50% on  |                      |                     |                     |
| a. Item 1.  | 711,616,751          |                     |                     |
| b. Item 2.  | (27,942,411)         |                     |                     |
| c. Item 4.d.  | 24,152,942           |                     |                     |
| d. Item 5.d.  | 28,107,643           |                     |                     |
| e. Total (a. + b. + c. - d.)  | <u>679,719,639</u>   |                     |                     |
| 7. Actual Return on Fair Value for Fiscal Year, Net of Investment Expenses  | <u>1,399,625,874</u> |                     |                     |
| 8. Return to be Spread for Fiscal Year (7. - 6.e.)*   | 719,906,235          |                     |                     |
| 9. Total Fair Value of Assets as of December 31, 2016   | 10,407,883,443       |                     |                     |
| 10. Return to be Spread   |                      |                     |                     |
| <u>Fiscal Year</u>  | <u>Return to</u>     | <u>Unrecognized</u> | <u>Unrecognized</u> |
| 2017  | be Spread            | Percent             | Return              |
| 2016  | 719,906,235          | 80%                 | 575,924,988         |
| 2015  | (13,011,088)         | 60%                 | (7,806,653)         |
| 2014  | (687,170,453)        | 40%                 | (274,868,181)       |
| 2013  | (167,852,724)        | 20%                 | (33,570,545)        |
| 2013  | 586,433,767          | 0%                  | <u>0</u>            |
|   |                      | Total               | <u>259,679,609</u>  |
| 11. Actuarial Value of Assets (9. - 10.)  |                      |                     | \$10,148,203,834    |
| 12. Recognized Rate of Return for the Year on Actuarial Value of Assets   |                      |                     | 8.13%               |
| 13. Rate of Return for the Year on Fair Value of Assets<br>(reported by Cook County - net of investment expenses) |                      |                     | 15.35%              |

\* Annual Return to be Spread calculation based on assumed 7.50% investment return which includes an assumption that all expenses and revenues are on average paid at mid-year

## Schedule of Funding Progress

The liabilities and assets resulting from the last ten actuarial valuations are as follows:

| <u>Actuarial<br/>Valuation Date</u> | <u>Actuarial<br/>Value of Assets<br/>(a)</u> | <u>Actuarial Accrued<br/>Liability (AAL)<br/>Entry Age<br/>(b)</u> | <u>Unfunded AAL<br/>(UAAL)<br/>(b-a)</u> | <u>Funded<br/>Ratio<br/>(a/b)</u> | <u>Covered<br/>Payroll<br/>(c)</u> | <u>UAAL as a<br/>Percentage of<br/>Covered Payroll<br/>(b-a)/(c)</u> |
|-------------------------------------|--|--|--|-----------------------------------|------------------------------------|--|
| December 31, 2008                   | \$8,036,074,797                              | \$10,097,027,865   | \$2,060,953,068                          | 79.59%                            | \$1,463,372,408                    | 140.84%  |
| December 31, 2009                   | 7,945,567,096                                | 11,489,081,298   | 3,543,514,202                            | 69.16%                            | 1,498,161,713                      | 236.52%  |
| December 31, 2010                   | 7,982,368,659                                | 12,023,222,885   | 4,040,854,226                            | 66.39%                            | 1,494,093,569                      | 270.46%  |
| December 31, 2011                   | 7,897,102,116                                | 12,628,274,561   | 4,731,172,445                            | 62.54%                            | 1,456,444,123                      | 324.84%  |
| December 31, 2012                   | 7,833,882,926                                | 13,418,486,943   | 5,584,604,017                            | 58.38%                            | 1,478,253,368                      | 377.78%  |
| December 31, 2013                   | 8,381,444,287                                | 13,636,576,177   | 5,255,131,890                            | 61.46%                            | 1,484,269,715                      | 354.06%  |
| December 31, 2014                   | 8,810,509,070                                | 14,140,547,353   | 5,330,038,283                            | 62.31%                            | 1,514,550,023                      | 351.92%  |
| December 31, 2015                   | 8,991,018,918                                | 14,936,591,336   | 5,945,572,418                            | 60.19%                            | 1,572,417,298                      | 378.12%  |
| December 31, 2016                   | 9,488,223,349                                | 15,456,773,985   | 5,968,550,636                            | 61.39%                            | 1,580,251,254                      | 377.70%  |
| December 31, 2017                   | 10,148,203,834                               | 15,671,756,443   | 5,523,552,609                            | 64.75%                            | 1,567,480,401                      | 352.40%  |

## Schedule of Employer Contributions

The required contributions and actual percentages contributed over the last ten years are as follows:

| <u>Fiscal Year Ended<br/>December 31,</u> | <u>Employer Annual Required<br/>Contribution (ARC)</u> | <u>Employer Contribution</u> | <u>Percentage<br/>Contributed</u> |
|---|--|------------------------------|-----------------------------------|
| 2008                                      | \$282,223,686  | \$150,227,360                | 53.23%                            |
| 2009                                      | 287,061,532  | 152,506,089                  | 53.13%                            |
| 2010                                      | 283,892,734  | 144,539,577                  | 50.91%                            |
| 2011                                      | 352,850,988  | 160,652,118                  | 45.53%                            |
| 2012                                      | 454,327,461  | 152,734,539                  | 33.62%                            |
| 2013                                      | 493,724,370  | 147,720,014                  | 29.92%                            |
| 2014                                      | 540,218,287  | 146,075,414                  | 27.04%                            |
| 2015                                      | 595,370,046  | 136,075,504                  | 22.86%                            |
| 2016                                      | 519,642,931  | 414,703,155                  | 79.81%                            |
| 2017                                      | 514,888,487  | 511,750,985                  | 99.39%                            |

## ACTUARIAL SECTION

### Actuarial Valuation - Pension Benefits (continued)

#### Schedule of Changes in Net Pension Liability

The GASB Statement No. 67 Change in Net Pension Liability

| <b>Total Pension Liability</b>                             | <b><u>December 31, 2017</u></b> | <b><u>December 31, 2016</u></b> |
|--|---------------------------------|---------------------------------|
| Service Cost   | \$ 478,904,097                  | \$ 559,176,234                  |
| Interest   | 1,082,982,064                   | 1,002,950,495                   |
| Changes of Benefit Terms                                   | -                               | -                               |
| Difference between Expected and Actual Experience          | (152,859,373)                   | 318,014,746                     |
| Change of Assumptions                                      | (950,493,320)                   | (1,893,474,930)                 |
| Benefit Payments, including Refund of Member Contributions | <u>(757,930,854)</u>            | <u>(709,560,225)</u>            |
| Net Change in Total Pension Liability                      | (299,397,386)                   | (722,893,680)                   |
| <br>   |                                 |                                 |
| Total Pension Liability - Beginning of Year                | \$23,240,192,010                | \$ 23,963,085,690               |
| Total Expected Pension Liability - End of Year             | \$22,940,794,624                | \$ 23,240,192,010               |
| <br>   |                                 |                                 |
| <b>Plan Fiduciary Net Position</b>                         |                                 |                                 |
| <br>   |                                 |                                 |
| Employer Contributions                                     | \$ 511,750,985                  | \$ 414,703,166                  |
| Member Contributions                                       | 138,826,184                     | 139,355,592                     |
| Net Investment Income                                      | 1,399,625,874                   | 629,442,470                     |
| Benefit Payments, including Refund of Member Contributions | (757,930,854)                   | (709,560,225)                   |
| Administrative Expenses                                    | (5,406,034)                     | (5,373,555)                     |
| Other  | <u>5,359,418</u>                | <u>4,046,147</u>                |
| Net Change in Plan Fiduciary Net Position                  | 1,292,225,573                   | 472,613,595                     |
| <br>   |                                 |                                 |
| Plan Fiduciary Net Position - Beginning of Year            | \$ 9,115,657,870                | \$ 8,643,044,275                |
| Plan Fiduciary Net Position - End of Year                  | \$10,407,883,443                | \$ 9,115,657,870                |

## Net Pension Liability (Asset)

The GASB Statement No. 67 Net Pension Liability

### Net Pension Liability (Asset)

|   | <u>December 31, 2017</u> | <u>December 31, 2016</u> |
|---|--------------------------|--------------------------|
| Total Pension Liability   | \$ 22,940,794,624        | \$ 23,240,192,010        |
| Plan Fiduciary Net Position   | <u>10,407,883,443</u>    | <u>9,115,657,870</u>     |
| Net Pension Liability (Asset)   | \$ 12,532,911,181        | \$ 14,124,534,140        |
| Plan Fiduciary Net Position<br>as a Percentage of the Total Pension Liability (Asset) | 45.37%                   | 39.22%                   |

## Sensitivity

The GASB Statement No. 67 Sensitivity of Net Pension Liability

### Sensitivity of the Expected Net Pension Liability to Changes in the Discount Rate

| <u>December 31, 2017</u>      | <u>1% Decrease</u> | <u>Current</u>   | <u>1% Increase</u> |
|-------------------------------|--------------------|------------------|--------------------|
| Discount Rate                 | 3.47%              | 4.47%            | 5.47%              |
| Net Pension Liability (Asset) | \$16,366,617,953   | \$12,532,911,181 | \$9,471,482,980    |

The discount rate used to measure the total pension liability was 4.47%. The discount rate used to measure the total pension liability at December 31, 2016 was 4.64%. The projection of cash flows used to determine the discount rate assumed that CEABF's contributions will continue to follow the current funding policy, which levies a tax annually equal to the total amount of contributions made by the members in the calendar year 2 years prior to the year of the levy, multiplied by 1.54. Based on this assumption, the Plan's fiduciary net position was projected to be insufficient to make all projected future benefit payments of current plan members. A municipal bond rate of 3.16% was used in the development of the blended GASB discount rate after that point. The 3.16% rate is based on the S&P Municipal Bond 20 Year High Grade Rate Index as of December 29, 2017. Based on the long-term rate of return of 7.25% and the municipal bond rate of 3.16%, the blended GASB discount rate would be 4.47%. Please see the supporting exhibits for additional detail.

## ACTUARIAL SECTION

### Actuarial Valuation - Pension Benefits (continued)

#### Pension Expense

The GASB Statement No. 68 Pension Expense

| Measurement Year Ending                           | <u>December 31, 2017</u> | <u>December 31, 2016</u> |
|---|--------------------------|--------------------------|
| Service Cost                                      | \$ 478,904,097           | \$ 559,176,234           |
| Interest  | 1,082,982,064            | 1,002,950,495            |
| Difference between Expected and Actual Experience | 7,632,549                | 46,827,261               |
| Change of Assumptions                             | (382,160,322)            | (138,444,087)            |
| Member Contributions                              | (138,826,184)            | (139,355,592)            |
| Projected Earnings on Plan Investments            | (679,719,639)            | (642,453,558)            |
| Difference between Expected and Actual Earnings   | 29,625,607               | 173,606,854              |
| Administrative Expense                            | 5,406,034                | 5,373,555                |
| Other   | (5,359,418)              | (4,046,147)              |
| Changes of Benefit Terms                          | -                        | -                        |
| Total Pension Expense                             | <u>\$ 398,484,787</u>    | <u>\$ 863,635,015</u>    |

#### Actuarial Assumptions and Methods

|                                       | <u>December 31, 2017</u> | <u>December 31, 2016</u> |
|---------------------------------------|--------------------------|--------------------------|
| Valuation date:                       |                          |                          |
| Actuarial cost method:                | Entry Age                | Entry Age                |
| Asset valuation method:               | Market                   | Market                   |
| Total Pension Liability Discount Rate | 4.47%                    | 4.64%                    |
| Actuarial assumptions:                |                          |                          |
| - Investment Rate of Return           | 7.25%                    | 7.50%                    |
| - Municipal Bond Rate                 | 3.16%                    | 3.71%                    |
| - Projected Salary Increases          | 7.50% - 1.50%            | 8.00% - 3.75%            |
| - Inflation Assumption                | 2.75%                    | 3.25%                    |

The projection of cash flows used to determine the discount rate assumed that County contributions will continue to follow the current funding policy based on the tax levy. Based on this assumption, the Plan's fiduciary net position was projected to be insufficient to make all projected future benefit payments of current plan members. A municipal bond rate of 3.16% was used in the development of the blended GASB discount rate after that point. The 3.16% rate is based on the S&P Municipal Bond 20 Year High Grade Rate Index as of December 29, 2017. Based on the long-term rate of return of 7.25% and the municipal bond rate of 3.16%, the blended GASB discount rate would be 4.47%. See the preceding exhibits for more detail.



## Investment Rate of Return Detail

The long-term expected rate of return on the Fund's investments was determined based on the results of an experience review performed by Conduent. The results of the experience review were presented to the Board by Conduent at the Board's March 8, 2018 Meeting and adopted at a subsequent meeting. The rate of return assumption was based on the target asset allocation of the fund. In the experience review, Conduent developed best estimate ranges of expected future real rates of return (net of inflation) for the portfolio, based on the expected returns of each major asset class and their weights in the portfolio. Conduent used an econometric model that forecasts a variety of economic environments and then calculates asset class returns based on functional relationships between the economic variables and the asset classes. Expected Investment expenses were subtracted and expected inflation was added to arrive at the long term expected nominal return. A value for the expected long term expected return was selected for the portfolio such that there was a better than 50% likelihood of the emerging returns exceeding the expected return.

Best estimates of arithmetic real rates of return (net of inflation) for each major asset class included in the Fund's target asset allocation as of December 31, 2017 are listed in the table below:

|                     | <b>Target<br/>Allocation</b> | <b>Long-Term<br/>Expected Real<br/>Rate of Return</b> |
|---------------------|------------------------------|---|
| US Large Cap        | 23.00%                       | 10.23%  |
| US Mid Cap          | 2.00%                        | 12.12%  |
| US Small Cap        | 8.00%                        | 12.09%  |
| Global Equity ex US | 21.00%                       | 9.51%   |
| Aggregate Bonds     | 26.00%                       | 4.77%   |
| Hedge Funds         | 6.00%                        | 7.31%   |
| NCREIF              | 6.00%                        | 9.77%   |
| REIT                | 3.00%                        | 6.94%   |
| Private Equity      | 4.00%                        | 11.43%  |
| Cash                | <u>1.00%</u>                 | 3.98%   |
| Total               | 100.00%                      |   |

## ACTUARIAL SECTION

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### Actuarial Valuation - Pension Benefits (continued)

#### Brief Summary of Benefit Provisions

Participant. A person employed by the County whose salary or wages is paid in whole or in part by the County. An employee in service on or after January 1, 1984 shall be deemed as a participant regardless of when he or she became an employee.

Service. For all purposes except the minimum retirement annuity and ordinary disability benefit, service during four months in any calendar year constitutes one year of service. For the minimum retirement annuity, all service is computed in whole calendar months. Service for any 15 days in a calendar month shall constitute a month of service.

For purposes of the minimum retirement annuity, service shall include:

- a. Any time during which the employee performed the duties of his or her position and contributed to the County Employees' and Officers' Annuity and Benefit Fund of Cook County (CEABF).
- b. Vacations and leaves of absence with whole or part pay.
- c. Periods during which the employee receives a disability benefit from the CEABF, and
- d. Certain periods of accumulated sick leave.

Retirement Annuity - Eligibility. An employee who withdraws from service with 10 or more years of service is entitled to a retirement annuity upon attainment of age 50.

#### **Retirement Annuity - Amount**

Money Purchase Annuity. The amount of annuity based on the sum accumulated from the employee's salary deductions for age and service annuity plus 1/10 of the sum accumulated from the contributions by the County for age and service annuity for each completed year of service after the first 10.

Minimum Formula Annuity. The amount of annuity provided is equal to 2.4% of final average salary for each year of service. Final average salary is the highest average monthly salary for any 48 consecutive months within the last 10 years of service. Salary for pension purposes is actual salary earned exclusive of overtime or extra salary. The maximum amount of annuity is 80% of final average salary.

If an employee retires before age 60, the annuity is reduced by .5% for each full month or fraction thereof that the employee is under age 60 when the annuity begins, unless the employee has 30 or more years of service, in which case there is no reduction for retirement before age 60.

If the Minimum Formula Annuity is greater than the Money Purchase Annuity, the employee is entitled to receive the Minimum Formula Annuity.

Automatic Increase in Retirement Annuity. Employees who retire from service having attained age 60 or more, or, if retirement occurs on or after January 1, 1991, with at least 30 years of service, 3% of the annuity beginning January of the year following the year in which the first anniversary of retirement occurs. If retirement is before age 60 with less than 30 years of service, increases begin in January of the year immediately following the year in which age 60 is attained. Beginning January 1, 1998, increases are calculated as 3% of the monthly annuity payable at the time of the increase.

**Brief Summary of Benefit Provisions (continued)**

Optional Plan of Contributions and Benefits. During the period through June 30, 2005, an employee may establish optional credit for additional benefits by making additional contributions of 3% of salary. The additional benefit is equal to 1% of final average salary for each year of service for which optional contributions have been paid. The additional benefit shall be included in the calculation of the automatic annual increase and the calculation of the survivor's annuity.

Alternate Annuity for County Officers. An alternate annuity is available for county officers elected on or before January 1, 2008. The amount of this alternate annuity is equal to 3% of final salary for the first 8 years of service, 4% for the next 4 years of service, and 5% thereafter, subject to a maximum of 80% of final salary. The elected county officer is required to contribute an additional 3% of salary to be eligible for the alternate annuity. The alternate survivor's annuity for survivors of elected county officers is 66-2/3% of the amount of the elected county officer's earned retirement annuity on the date of death, subject to a minimum payment of 10% of salary.

Annuities for Members of the Cook County Police Department. In lieu of the regular of minimum retirement annuity, a deputy sheriff who is a member of the County Police Department may be entitled to the following annuity:

Upon withdrawal from service after having attained age 50 in service with 20 or more years of service credit as a police officer, the officer shall be entitled to an annuity computed as follows: 50% of final average salary, plus 2% of final average salary for each year of service in excess of 20 years, subject to a maximum of 80% of final average salary.

**Surviving Spouse's Annuity - Death in Service**

Money Purchase Annuity- Death In Service. The amount of annuity based on the accumulated salary deductions and County contributions for both the employee and the spouse.

Minimum Formula Annuity. A minimum annuity is provided for the eligible surviving spouse of an employee who dies in service with any number of years of service. The amount of such minimum spouse's annuity is equal to 65% of the annuity the employee would have been entitled to as of the date of death, provided the spouse on such date is age 55 or older, or that the employee had 30 or more years of service. If the spouse is under age 55 and the employee had less than 30 years of service, the amount of the spouse's annuity shall be discounted by .5% for each month that the spouse is less than age 55 on the date of the employee's death. The amount of the surviving spouse's annuity shall not be less than 10% of the employee's final average salary as of the date of death.

If the Minimum Formula Annuity is greater than the Money Purchase Annuity, the surviving spouse shall be entitled to receive the Minimum Formula Annuity.

Surviving Spouse's Annuity - Death after Retirement. The amount of the annuity is the greater of the money purchase annuity or the minimum formula annuity. The surviving spouse of an annuitant who dies on or after July 1, 2002 shall be entitled to an annuity of 65% of the employee's annuity at the time of death if the employee had at least 10 years of service, reduced by .5% per month that the spouse is under age 55 at the time of the employee's death. There is no reduction for age if the employee had at least 30 years of service.

## ACTUARIAL SECTION

### Actuarial Valuation - Pension Benefits (continued)

#### Brief Summary of Benefit Provisions (continued)

Automatic Annual Increase in Surviving Spouse's Annuity. On the January 1 occurring on or immediately after the first anniversary of the deceased employee's death, the surviving spouse's annuity shall be increased by 3% of the amount of annuity payable at the time of the increase. On each January 1 thereafter, the annuity shall be increased by an additional 3% of the amount of annuity payable at the time of the increase.

Child's Annuity. Annuities are provided for unmarried children of a deceased employee who are under age 18. An adopted child is entitled to the child's annuity if such child was legally adopted at least one year before the child's annuity becomes payable. The child's annuity is payable under the following conditions:

(a) the death of the employee was a duty related death; or (b) if the death is not a duty related death, the employee died while in service and had completed at least four years of service from the date of his or her original entrance in service and at least two years from the latest re-entrance; or (c) if the employee died while in receipt of an annuity, her or she must have withdrawn from service after attainment of age 50

The amount of the annuity is the greater of 10% of the employee's final salary at the date of death or \$140 per month for each child.

Duty Disability Benefits. Duty disability benefits are payable to an employee who becomes disabled as a result of an accidental injury incurred while in the performance of an act of duty. Benefits begin on the first regular and normal work date for which the employee does not receive a salary. The amount of the duty disability benefit is equal to 75% of the employee's salary at the date of injury, reduced by the amount the employee receives from Workers' Compensation. However, if the disability, in any measure has resulted from any physical defect or disease that existed at the time such injury was sustained, the duty disability benefit shall be 50% of salary. The CEABF contributes the 8.5% (9% for County Police) of salary normally contributed by the employee for pension purposes.

If the disability commences prior to age 60, duty disability benefits are payable during disability until the employee attains age 65. If the disability begins after age 60, the benefit is payable during disability for a period of 5 years.

Recipients of duty disability benefits also have a right to receive child's disability benefits of \$10 per month on account of each unmarried child less than age 18. Total children's disability benefits shall not exceed 15% of the employee's salary.

Ordinary Disability Benefits. Ordinary disability benefits are provided for employees who become disabled as the result of any cause other than injury incurred in the performance of an act of duty. The amount of the benefit is 50% of the employee's annual salary at the time of disability. The CEABF also contributes the 8.5% (9% for County Police) of salary normally contributed by the employee for pension purposes.

Ordinary disability benefits are payable after the first 30 days of disability provided the employee is not then in receipt of salary. Ordinary disability benefits are payable until the first of the following shall occur:

(a) the disability ceases; or  
(b) the date that total payments equal the lesser of (1) 1/4 of the total service rendered prior to disability, and (2) five years.

An employee unable to return to work at the expiration of ordinary disability benefit is entitled to an annuity beginning on the date of the employee's withdrawal from service regardless of age on such date.

## Brief Summary of Benefit Provisions (continued)

Death Benefit. Upon the death of an active or retired employee, a death benefit of \$1,000 is payable to the employee's designated beneficiary or to the employee's estate if no beneficiary has been designated.

Group Health Benefits. The CEABF may pay all or any portion of the premium for health insurance on behalf of each annuitant who participates in any of the CEABF's health care Plans. As of January 1, 2005, the CEABF is paying 55% of the premiums for retiree annuitants and 70% of the premiums for survivor annuitants.

Refund to Employee Upon Withdrawal From Service. Upon withdrawal from service, an employee under the age of 55, or anyone with less than 10 years of service is eligible for a refund. The employee is entitled to a refund of the amount accumulated to his or her credit for age and service annuity and the survivor's annuity together with the total amount contributed for the automatic annual increase, without interest. Upon receipt of such refund, the employee forfeits all rights to benefits from the CEABF.

Election of Refund in Lieu of Annuity. If an employee's annuity or spouse's annuity is less than \$150.00 per month, such employee or spouse annuitant may elect a refund of the employee's accumulated contributions in lieu of a monthly annuity.

Refund For Surviving Spouse's Annuity. If an employee is unmarried at the time of retirement, all contributions for surviving spouse's annuity will be refunded with interest at the rate of 3% per year, compounded annually.

Refund of Remaining Amounts. In the event that the total amount accumulated to the account of employee from employee contributions for annuity purposes has not been paid to the employee and surviving spouse as a retirement or surviving spouse's annuity before the death of the survivor of the employee and spouse, a refund of any excess amount shall be paid to the children of the employee, in equal parts, or if there are no children, to the beneficiaries of the employee or the administrator of the estate.

Employee Contributions. Employees contribute through salary deductions 8.5% (9% for County Police) of salary to the CEABF, 6.5% (7% for County Police) being for the retirement annuity. 1.5% being for the surviving spouse's annuity, and .5% being for the automatic increase in retirement annuity.

Employer Contributions. The County levies a tax annually equal to the total amount of contributions made by employees in the calendar year 2 years prior to the year of the levy, multiplied by 1.54.

Employer Pick-up of Employee Contributions. Since April 15, 1982, regular employee contributions have been designated for federal income tax purposes as being made by the employer. The employee's W-2 salary is therefore reduced by the amount of contribution. For pension purposes, the salary remains unchanged. For purposes of benefits, refunds, and financing, these contributions are treated as employee contributions.

## ACTUARIAL SECTION

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### Actuarial Valuation - Pension Benefits (continued)

#### Brief Summary of Benefit Provisions (continued)

##### Persons Who First Become Participants On or After January 1, 2011

The following changes to the aforementioned provisions apply to persons who first become participants on or after January 1, 2011:

1. The highest salary for annuity purposes is equal to the average monthly salary obtained by dividing the participant's total salary during the 96 consecutive months of service within the last 120 months of service in which the total compensation was the highest by the number of months in that period.
2. For 2011, the annual salary is limited to the Social Security wage base of \$106,800. Limitations for future years shall automatically be increased by the lesser of 3% or one-half of percentage change in the Consumer Price Index-U for the 12 months ending in September.
3. A participant is eligible to retire with unreduced benefits at age 67 with at least 10 years of service credit. However, a participant may elect to retire at age 62 with at least 10 years of service credit and receive a retirement annuity reduced by one-half of 1% for each month that his or her age is under 67.
4. The initial survivor's annuity is equal to 66-2/3% of the participant's earned retirement annuity at the date of death, subject to automatic annual increases of the lesser of 3% or one-half of the increase in the Consumer Price Index-U for the 12 months ending in September, based on the originally granted survivor's annuity.
5. Automatic annual increases in the retirement annuity then being paid are equal to the lesser of 3% or one-half the annual change in the Consumer Price Index-U, whichever is less, based on the originally granted retirement annuity.
6. Refund upon withdrawal from service. Upon withdrawal from service, an employee who withdraws from service before age 62 regardless of length of service or withdraws with less than 10 years of service regardless of age is entitled to a refund of total contributions made by the employee without interest.

## Description of Actuarial Methods and Valuation Procedures

### Actuarial Cost Method

Liabilities and contributions shown in this report are computed using the **Entry Age Actuarial Cost Method** of funding.

Sometimes called a “funding method,” this is a particular technique used by actuaries for establishing the amount and incidence of the annual actuarial cost of pension Plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily the annual contribution to the Plan is comprised of (1) the normal cost and (2) an amortization payment on the unfunded actuarial accrued liability.

Under the Entry Age Actuarial Cost Method, the **Normal Cost** is computed as the level percentage of pay which, if paid from the earliest time each Member would have been eligible to join the Plan if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to a fund sufficient to pay all benefits under the Plan.

The Normal Cost for the Plan is determined by summing individual results for each active Member and determining an average normal cost rate by dividing the summed individual normal costs by the total payroll of Members before assumed retirement age.

The **Actuarial Accrued Liability** under this method at any point in time is the theoretical amount of the fund that would have accumulated had annual contributions equal to the Normal Cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date.)

The **Unfunded Actuarial Accrued Liability** is the excess of the Actuarial Accrued Liability over the Actuarial Value of Plan Assets actually on hand on the valuation date.

Under this method experience gains or losses, i.e. decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the Unfunded Actuarial Accrued Liability.

## ACTUARIAL SECTION

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### Actuarial Valuation - Pension Benefits (continued)

#### Description of Actuarial Methods and Valuation Procedures (continued)

##### Asset Valuation Method

The actuarial value of assets is based on a five-year smoothing method and is determined by spreading the effect of each year's investment return in excess of or below the expected return. The Fair Value of assets at the valuation date is reduced by the sum of the following:

- (i) 80% of the return to be spread during the first year preceding the valuation date,
- (ii) 60% of the return to be spread during the second year preceding the valuation date,
- (iii) 40% of the return to be spread during the third year preceding the valuation date, and
- (iv) 20% of the return to be spread during the fourth year preceding the valuation date.

The return to be spread is the difference between (1) the actual investment return on Fair Value and (2) the expected return on Fair Value.

##### Valuation Procedures

No actuarial liability is included for members who terminated non-vested prior to the valuation date, except those due a refund of contributions.

No termination or retirement benefits were projected to be greater than the dollar limitation required by the Internal Revenue Code Section 415 for governmental Plans.

Annual increases in salary were limited to the dollar amount defined under Internal Revenue Code Section 401(a)(17) for affected members.



## Summary of Actuarial Assumptions and Changes in Assumptions

The actuarial assumptions used for the December 31, 2017 actuarial valuation are summarized below. The mortality rate, termination rate, retirement rate, and salary assumptions are based on an experience analysis of the Fund over the period 2013 through 2016. These assumptions were adopted by the Board as of December 31, 2017, based on the recommendation from the actuary.

Mortality Rates. The RP-2014 Blue Collar table with the following adjustments:

Pre-commencement: adjust all rates by 75%

Post-commencement: adjust rates as follows:

| Age          | Adjustment Factor |
|--------------|-------------------|
| Less than 50 | No adjustment     |
| 50 - 64      | 150%              |
| 65-69        | 130%              |
| 70-79        | 110%              |
| 80 and over  | No adjustment     |

Fully generational mortality improvement projection assumptions are applied to the above table from base year 2006 using the Conduent Modified MP-2017 projection scale. The substantive difference between the Conduent scale and that published by the SOA is that the Conduent scale reaches an ultimate improvement rate of 0.75% versus the SOA's scale which reaches an ultimate improvement rate of 1.0%.

Termination Rates. Termination rates based on the recent experience of the Fund were used. The following is a sample of the termination rates used:

### Rates of Termination Age at Entrance

| Attained<br>Age | Males |      |      |      | Females |      |      |      |
|-----------------|-------|------|------|------|---------|------|------|------|
|                 | 22    | 27   | 32   | 37   | 22      | 27   | 32   | 37   |
| 22              | .330  |      |      |      | .321    |      |      |      |
| 27              | .075  | .174 |      |      | .122    | .161 |      |      |
| 32              | .028  | .117 | .140 |      | .030    | .128 | .158 |      |
| 37              | .028  | .037 | .093 | .200 | .030    | .033 | .096 | .200 |
| 42              | .028  | .037 | .034 | .070 | .030    | .033 | .034 | .056 |
| 47              | .028  | .037 | .034 | .025 | .030    | .033 | .034 | .026 |

**ACTUARIAL SECTION**

**Actuarial Valuation - Pension Benefits (continued)**

**Summary of Actuarial Assumptions and Changes in Assumptions (continued)**

Retirement Rates. For persons who became participants prior to January 1, 2011, rates of retirement for each age from 50 to 80 based on the recent experience of the Fund. The following are samples of the rates of retirement used:

| Age   | Male                          |                             | Female                        |                             |
|-------|-------------------------------|-----------------------------|-------------------------------|-----------------------------|
|       | Less than 30 years of service | 30 or more years of service | Less than 30 years of service | 30 or more years of service |
| <50   | 0.0%                          | 0.0%                        | 0.0%                          | 0.0%                        |
| 50    | 2.5%                          | 40.0%                       | 2.0%                          | 38.0%                       |
| 51    | 2.5%                          | 40.0%                       | 2.0%                          | 30.0%                       |
| 52-53 | 2.5%                          | 35.0%                       | 2.0%                          | 30.0%                       |
| 54    | 4.0%                          | 30.0%                       | 3.0%                          | 30.0%                       |
| 55-56 | 4.0%                          | 30.0%                       | 4.5%                          | 30.0%                       |
| 57    | 6.0%                          | 30.0%                       | 4.5%                          | 30.0%                       |
| 58    | 7.0%                          | 30.0%                       | 5.0%                          | 30.0%                       |
| 59    | 12.5%                         | 32.0%                       | 10.0%                         | 35.0%                       |
| 60    | 15.0%                         | 25.0%                       | 15.0%                         | 35.0%                       |
| 61    | 12.5%                         | 18.0%                       | 12.0%                         | 30.0%                       |
| 62    | 12.5%                         | 24.0%                       | 12.0%                         | 30.0%                       |
| 63    | 12.5%                         | 30.0%                       | 13.0%                         | 30.0%                       |
| 64    | 15.0%                         | 22.5%                       | 16.0%                         | 30.0%                       |
| 65    | 20.0%                         | 24.0%                       | 22.0%                         | 35.0%                       |
| 66    | 20.0%                         | 30.0%                       | 20.0%                         | 30.0%                       |
| 67-68 | 20.0%                         | 24.0%                       | 20.0%                         | 30.0%                       |
| 69    | 20.0%                         | 24.0%                       | 20.0%                         | 30.0%                       |
| 70    | 25.0%                         | 35.0%                       | 24.0%                         | 35.0%                       |
| 71    | 28.0%                         | 35.0%                       | 20.0%                         | 24.0%                       |
| 72    | 25.0%                         | 35.0%                       | 28.0%                         | 28.0%                       |
| 73    | 30.0%                         | 60.0%                       | 24.0%                         | 25.0%                       |
| 74-75 | 30.0%                         | 75.0%                       | 25.0%                         | 30.0%                       |
| 76-77 | 40.0%                         | 75.0%                       | 40.0%                         | 40.0%                       |
| 78-79 | 50.0%                         | 75.0%                       | 50.0%                         | 50.0%                       |
| 80+   | 100.0%                        | 100.0%                      | 100.0%                        | 100.0%                      |

Retirement Rates. For persons who became or will become participants on or after January 1, 2011, rates of retirement for each age from 62 to 75 were used. The following are samples of the rates of retirement that were used:

| Age | Rates of Retirement |         |
|-----|---------------------|---------|
|     | Males               | Females |
| 62  | .400                | .350    |
| 64  | .225                | .150    |
| 67  | .400                | .350    |
| 70  | .450                | .200    |
| 75  | 1.000               | 1.000   |

**Summary of Actuarial Assumptions and Changes in Assumptions (continued)**

Retirement Rates. For Deputy Sheriffs who are members of the Cook County Police Department with 20 or more years of service at retirement.

| <u>Age</u> | <u>Rate</u> |
|------------|-------------|
| 50         | 10.0%       |
| 51         | 10.0%       |
| 52         | 10.0%       |
| 53         | 10.0%       |
| 54         | 10.0%       |
| 55         | 10.0%       |
| 56         | 15.0%       |
| 57         | 25.0%       |
| 58         | 10.0%       |
| 59         | 10.0%       |
| 60         | 35.0%       |
| 61         | 35.0%       |
| 62         | 35.0%       |
| 63         | 35.0%       |
| 64         | 35.0%       |
| 65         | 100.0%      |

Interest Rate. 7.25% per year, compounded annually.

Inflation Rate. 2.75% per year, compounded annually.

Salary Rate (net of inflation):

| <u>Age</u> | <u>Rate</u> |
|------------|-------------|
| 25         | 4.85%       |
| 30         | 4.25%       |
| 35         | 2.75%       |
| 40         | 1.50%       |
| 45+        | 7.50%       |

Loading for Reciprocal Benefits. Costs and liabilities of active employees were loaded by 1% for reciprocal annuities where the County is the last employer. It was assumed that 50% of inactive members with one or more year of service would receive a reciprocal annuity where the County is not the last employer. These reciprocal annuities were valued as of the member’s retirement date as 10 times an inactive member’s accumulated contributions.

Marital Status. 70% of participants were assumed to be married.

Spouse’s Age. The spouse of a male employee was assumed to be four years younger than the employee. The spouse of a female employee was assumed to be four years older than the age of the employee.

Inactives. Benefits were estimated based on service and pay and valued as deferred to 55 annuities.

## ACTUARIAL SECTION

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### Actuarial Valuation - Pension Benefits (continued)

## Glossary of Terms

|   |   |
|---|---|
| <i>Actuarial Accrued Liability</i>                | Total accumulated cost to fund pension benefits arising from service in all prior years.  |
| <i>Actuarial Cost Method</i>                      | Technique used to assign or allocate, in a systematic and consistent manner, the expected cost of a pension Plan for a group of Plan members to the years of service that give rise to that cost.   |
| <i>Actuarial Present Value of Future Benefits</i> | Amount which, together with future interest, is expected to be sufficient to pay all future benefits.   |
| <i>Actuarial Valuation</i>                        | Study of probable amounts of future pension benefits and the necessary amount of contributions to fund those benefits.  |
| <i>Actuary</i>                                    | Person who performs mathematical calculations pertaining to pension and insurance benefits based on specific procedures and assumptions.  |
| <i>Annual Required Contribution</i>               | Disclosure measure of annual pension cost.  |
| <i>GASB 67</i>                                    | Governmental Accounting Standards Board Statement Number 67.  |
| <i>Maturity Ratio</i>                             | The ratio of the actuarial accrued liability for members who are no longer active to the total actuarial accrued liability. A ratio of over 50% indicates a mature Plan. The higher the maturity ratio, the more volatile the contribution rate will be from year to year given actuarial gains and losses. |
| <i>Normal Cost</i>                                | That portion of the actuarial present value of benefits assigned to a particular year in respect to an individual participant or the plan as a whole.   |
| <i>Vested Benefits</i>                            | Benefits which are unconditionally guaranteed regardless of employment status.  |

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# Actuarial Certification - Postemployment Healthcare

Board of Trustees

County Employees' and Officers' Annuity and Benefit Fund of Cook County

Chicago, Illinois

Ladies and Gentlemen:

This report summarizes the actuarial valuation results of County Employees' and Officers' Annuity and Benefit Fund of Cook County ("CEABF" or "the Fund") as of December 31, 2017 performed by Conduent HR Services ("Conduent").

The purpose of this valuation is to determine the Annual Required Contribution ("ARC") in accordance with GASB Statement No. 45, Accounting and Financial Reporting by Employers for Postemployment Benefits Other Than Pensions ("GASB 45") as well as the Net OPEB Liability of the Plan as of the valuation date December 31, 2017 in accordance with GASB Statement No. 74, Accounting and Financial Reporting by Employers for Postemployment Benefit Other Than Pensions ("GASB 74").

GASB 74 replaces GASB Statement No. 43, Financial Reporting for Postemployment Benefit Plans Other than Pension Plans ("GASB 43") for fiscal years ending 2017 and later. We have prepared the required accounting information for GASB 74 for the fiscal year ending December 31, 2017.

The December 31, 2016 GASB 74 net OPEB liability is based on a discount rate of 3.71%. All other data, assumptions, and plan provisions used as of December 31, 2016 are those documented in the County Employees' and Officers' Annuity and Benefit Fund of Cook County Retiree Health Insurance Plan actuarial valuation report provided on June 7, 2017.

CEABF may use this report as a source of information for its financial statements. Use of this report for any other purpose may not be appropriate. This report should not be provided except in its entirety.

Because of the risk of misinterpretation of actuarial results, you should ask Conduent to review any statement you wish to make on the results contained in this report. Conduent will accept no liability for any such statements made without prior review by Conduent.

## Actuarial Certification - Postemployment Healthcare (continued)

The actuarial valuation is based on unaudited financial data, working rates, plan information and census data provided by Fund staff and summarized in this report. The calculations rely on this information and are only as accurate as the information provided. The benefits considered in this valuation are postretirement health only. The County may offer other postemployment benefits that warrant measurement under GASB 45 and GASB 74. However, the scope of this valuation is limited to the County's postretirement health and welfare benefit program as described in this report. The actuary did not verify the data and information submitted but did perform tests for consistency and reasonableness.

All costs, liabilities and other factors under the Plan were determined in accordance with generally accepted actuarial principles and procedures. An actuarial cost method is used to measure the actuarial liabilities which we believe is reasonable and is consistent with the requirements of GASB 74.

The actuary for CEABF performs an analysis of plan experience periodically and recommends changes in basic assumptions if, in the opinion of the actuary, assumption changes are needed to more accurately reflect expected future experience. On April 5, 2018 the Retirement Board adopted revised assumptions for use in valuing the Plan. These assumptions were based on an experience analysis performed by Conduent, which reviewed experience for the four-year period ending December 31, 2016. This valuation reflects the adopted changes. We believe the economic and demographic assumptions used are reasonable for financial accounting purposes and represent a reasonable estimate of the plan's future economic and demographic experience. A summary of the actuarial assumptions and methods used in this actuarial valuation are shown in Section 5.

The assumptions and methods used to determine the ARC of CEABF as outlined in this report and all supporting schedules meet the parameters and requirements pursuant to GASB 45. The assumptions and methods used to determine the Net OPEB Liability of CEABF as disclosed in this report meet the parameters and requirements pursuant to GASB 74.

The undersigned are Members of the American Academy of Actuaries and in combination meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained in this report. To the best of the undersigned actuaries' knowledge, the actuarial statement contained in this report is complete and accurate. The calculations in this report have been prepared in accordance with all Applicable Actuarial Standards of Practice. We are available to answer any questions on the material contained in the report or to provide explanations or further details as may be appropriate.

CONDUENT, INC



Robert Besenhofer, ASA, MAAA  
Director, Health

# Actuarial Valuation - Postemployment Healthcare

## Overview

The County Employees' and Officers' Annuity and Benefit Fund of Cook County ("CEABF" or "the Fund") offers health benefits to retired employees of Cook County and their eligible dependents. This report presents the results of the actuarial valuation of the Plan benefits as of the valuation date of December 31, 2017.

## Purpose

This report has been prepared at the request of the Fund for use in financial reporting of CEABF under GASB 74 and GASB 45. It may not be appropriate for other purposes, such as analyzing proposed design alternatives, funding, pricing or option evaluation. Use of this report for any other purpose may not be appropriate and may result in mistaken conclusions due to failure to understand applicable assumptions, methodologies or inapplicability of the report for that purpose. No one may make any representations or warranties based on any statements or conclusions contained in this report without the written consent of Conduent.

## Membership

### Summary of Membership Data

|  | <b>Year Ending December 31,</b> |                    |
|--|---------------------------------|--------------------|
|  | <b><u>2017</u></b>              | <b><u>2016</u></b> |
| 1. Annuitants Currently Receiving Benefits                             | 8,997                           | 8,954              |
| 2. Covered Spouses of Annuitants Currently Receiving Benefits          | 2,608                           | 2,706              |
| 2. Separated Employees Entitled To Benefits But Not Yet Receiving Them | 1,528                           | 1,489              |
| 3. Active Employees  | <u>20,349</u>                   | <u>20,969</u>      |
| 4. Total Number of Members   | 33,482                          | 34,118             |



## Changes in Plan Provisions

The following changes in benefits and other plan provisions in the Retiree Health Insurance actuarial valuation have been made since the last valuation performed as of December 31, 2016:

- The 2018 subsidy for member health benefits was changed from 52% to 50% for annuitants in the Choice Plan Medicare, the Choice Plan non-Medicare and the Choice Plus Plan Medicare.
- The 2018 subsidy for survivor health benefits was changed from 67% to 65% for annuitants in the Choice Plan Medicare, the Choice Plan non-Medicare and the Choice Plus Plan Medicare.
- The 2018 subsidy for member health benefits was changed from 47% to 45% for annuitants in the Choice Plus Plan non-Medicare.
- The 2018 subsidy for survivor health benefits was changed from 62% to 60% for annuitants in the Choice Plus Plan non-Medicare.

## Changes in Actuarial Assumptions, Methods, or Procedures

The following changes in the actuarial assumptions or valuation procedures in the Retiree Health Insurance actuarial valuation have been made since the last valuation performed as of December 31, 2016:

- The rates of mortality, termination, retirement, and salary increases were changed to reflect the results of the experience review for the four year period ended December 31, 2016 presented to the Retirement Board on April 5, 2018.
- The discount rate decreased from 4.50% to 4.00% based on the 50 basis point decrease in the inflation rate reflected in the experience review.
- In addition, the Board also adopted the following changes to the OPEB only assumptions based on the assumption study. The percentage of active employees who elect medical coverage upon retirement was reduced from 70% to 65%. The percentage of those retirees who elect spouse coverage was reduced from 40% to 35%. The percentage of vested terminated participants who elect medical coverage upon retirement was increased from 30% to 40%.
- The age at which vested terminated employees retire and elect medical coverage was changed to age 61, from an assumption that varied by age.
- The per capita plan costs were updated to reflect the most recent year of claims experience and working premium rates were updated for 2018.
- Future retirees are assumed to elect among the plan choices in the same proportion as employees who retired during the last year. This election percentage was updated to reflect current retiree experience.
- The estimate of the High-Cost Plan Excise Tax was updated to reflect the Tax Cuts and Jobs Act passed in December 2017 which changed the inflation rate measure for purposes of determining the limits for the tax to use chained CPI, as well as the Budget Continuing Resolution which deferred the application of the Cadillac tax from 2020 to 2022.

ACTUARIAL SECTION

Actuarial Valuation - Postemployment Healthcare (continued)

**Changes in the GASB 45 Actuarial Accrued Liability (AAL)**

|  | <u>Accrued Liability (AAL)</u> | <u>% Change</u> |
|--|--------------------------------|-----------------|
| <b>December 31, 2016 Report</b>  | \$1,957,804,688                |                 |
| Expected Growth Due to the Passage of Time                             | 107,831,753                    | 5.5%            |
| Demographic Experience   | (49,098,945)                   | -2.5%           |
| Updated Per Capita Health Plan Experience                              | (5,234,697)                    | -0.3%           |
| Change in Participant Contributions                                    | (70,964,766)                   | -3.6%           |
| Change in Estimated Excise Tax   | 27,937,972                     | 1.4%            |
| Assumption Changes - Retirement/Termination/<br>Mortality/Salary Scale | (143,027,850)                  | -7.3%           |
| Assumption Changes - OPEB Specific Assumptions                         | (72,880,336)                   | -3.7%           |
| Change in Discount Rate  | <u>134,248,623</u>             | <u>6.9%</u>     |
| <b>December 31, 2017 Report</b>  | \$1,886,616,443                | -3.6%           |

### Development of Annual Required Contribution (ARC)

| Development of Employer Contribution                    | December 31, 2017<br>Valuation ARC<br>for Fiscal Year<br><u>2018</u> | December 31, 2016<br>Valuation ARC<br>for Fiscal Year<br><u>2017</u> |
|---|--|--|
| 1. Annual Payroll                                       | \$1,602,986,483  | \$1,609,559,234  |
| 2. Actuarial Accrued Liability                          |  |  |
| a. Active Members                                       | 985,712,890  | 1,078,864,621  |
| b. Inactive Members with Deferred Benefits              | 89,416,693   | 53,611,442   |
| c. Retired Members and Beneficiaries Receiving Benefits | <u>811,486,860</u>   | <u>825,328,625</u>   |
| d. Total (a. + b. + c.)                                 | 1,886,616,443  | 1,957,804,688  |
| 3. Actuarial Value of Assets                            | -  | -  |
| 4. Unfunded Actuarial Accrued Liability (UAAL)          | 1,886,616,443  | 1,957,804,688  |
| 5. UAAL as a Percent of Annual Payroll                  | 117.7%   | 121.6%   |
| 6. Amortization Payment for UAAL                        |  |  |
| a. Amount   | 104,906,938  | 115,016,890  |
| b. As a % of pay  | 6.5%   | 7.1%   |
| 7. Employer Normal Cost                                 |  |  |
| a. Amount   | 62,262,593   | 65,273,779   |
| b. As a % of pay  | 3.9%   | 4.1%   |
| 8. Interest Cost  | <u>5,664,815</u>   | <u>7,057,754</u>   |
| 9. Annual Required Contribution (6. + 7. + 8.)          | 172,834,346  | 187,348,423  |
| 10. Pay-go Costs for the Year <sup>2</sup>              | 51,604,270   | 47,454,621   |
| 11. Amortization Period (years)                         | 30   | 30   |

<sup>1</sup> The 2018 ARC is included for illustrative purposes only. GASB 75 will replace GASB 45 for the 2018 Fiscal Year and the ARC will no longer be recognized in the financial statements.

<sup>2</sup> Source: Estimated amount for 2018; for 2017 as provided by CEABF. 2017 Pay-as-you-go costs are net of prescription drug rebates.

## ACTUARIAL SECTION

### Actuarial Valuation - Postemployment Healthcare (continued)

#### Schedule of Funding Progress

A history of the GASB Statement No. 45 liabilities and assets follows:

| <u>Actuarial<br/>Valuation Date<br/>December 31,</u> | <u>Actuarial<br/>Value of Assets</u> | <u>Actuarial Accrued<br/>Liability</u> | <u>Unfunded<br/>Liability</u> | <u>Funded<br/>Ratio</u> | <u>Covered<br/>Payroll</u> | <u>UAAL as a<br/>Percentage of<br/>Payroll</u> |
|--|--------------------------------------|--|-------------------------------|-------------------------|----------------------------|--|
| 2007   | \$ -                                 | \$1,554,123,496                        | \$1,554,123,496               | 0.0%                    | \$1,370,844,734            | 113.4%   |
| 2008   | -                                    | 1,448,828,756                          | 1,448,828,756                 | 0.0%                    | 1,463,372,408              | 99.0%  |
| 2009   | -                                    | 1,686,872,018                          | 1,686,872,018                 | 0.0%                    | 1,498,161,713              | 112.6%   |
| 2010   | -                                    | 1,724,622,462                          | 1,724,622,462                 | 0.0%                    | 1,494,093,569              | 115.4%   |
| 2011   | -                                    | 1,678,571,388                          | 1,678,571,388                 | 0.0%                    | 1,456,444,123              | 115.3%   |
| 2012   | -                                    | 1,845,609,132                          | 1,845,609,132                 | 0.0%                    | 1,478,253,368              | 124.9%   |
| 2013   | -                                    | 1,978,767,490                          | 1,978,767,490                 | 0.0%                    | 1,484,269,715              | 133.3%   |
| 2014   | -                                    | 1,980,088,617                          | 1,980,088,617                 | 0.0%                    | 1,514,550,023              | 130.7%   |
| 2015   | -                                    | 2,134,106,707                          | 2,134,106,707                 | 0.0%                    | 1,597,597,077              | 133.6%   |
| 2016   | -                                    | 1,957,804,688                          | 1,957,804,688                 | 0.0%                    | 1,609,559,234              | 121.6%   |
| 2017   | -                                    | 1,886,616,443                          | 1,886,616,443                 | 0.0%                    | 1,602,986,483              | 117.7%   |

#### Schedule of Employer Contributions

A history of the GASB Statement No. 45 required contributions and actual percentages follow:

| <u>Fiscal Year Ended<br/>December 31,</u> | <u>Annual Required<br/>Contribution (ARC)</u> | <u>Employer Contribution</u> | <u>Employer Contribution<br/>as a Percent of ARC</u> |
|---|---|------------------------------|--|
| 2007                                      | \$169,154,664                                 | \$31,420,216                 | 18.57%   |
| 2008                                      | 169,823,905                                   | 37,781,310                   | 22.25%   |
| 2009                                      | 157,964,519                                   | 35,779,228                   | 22.65%   |
| 2010                                      | 163,823,488                                   | 40,183,057                   | 24.53%   |
| 2011                                      | 165,176,771                                   | 38,185,306                   | 23.12%   |
| 2012                                      | 156,700,388                                   | 37,986,237                   | 24.24%   |
| 2013                                      | 178,698,965                                   | 40,097,630                   | 22.44%   |
| 2014                                      | 189,907,202                                   | 43,957,458                   | 23.15%   |
| 2015                                      | 190,871,452                                   | 50,756,817                   | 26.59%   |
| 2016                                      | 206,678,514                                   | 49,565,249                   | 23.98%   |
| 2017 <sup>1</sup>                         | 187,348,423                                   | 47,454,621                   | 25.33%   |

<sup>1</sup> Source: Total Employer's Contribution for 2017 as provided by CEABF.

#### GASB 45 Net OPEB Obligation (NOO) as of December 31, 2017

|  |                     |
|--|---------------------|
| 1. NOO as of December 31, 2016 <sup>1</sup>          | \$1,166,231,887     |
| 2. Annual Required Contribution (ARC)                | 187,348,423         |
| 3. Interest on NOO                                   | 46,649,275          |
| 4. Adjustment to ARC                                 | <u>(67,443,306)</u> |
| 5. Annual OPEB Cost for 2017 (2. + 3. + 4.)          | 166,554,392         |
| 6. Total Employer Contribution for 2017 <sup>2</sup> | <u>47,454,621</u>   |
| 7. NOO as of December 31, 2017 (1. + 5. - 6.)        | \$1,285,361,048     |

<sup>1</sup> Source: FYE 2016 CAFR. This number was not calculated or reviewed by Conduent.

<sup>2</sup> Source: Total Employer's Contribution for 2017 as provided by CEABF

**GASB 74 Components of the Net OPEB Liability and Schedule of Employer Contributions****The components of the net OPEB liability are as follows:**

|   |                 |
|---|-----------------|
| Total OPEB liability  | \$2,148,249,441 |
| Plan fiduciary net position   | 0               |
| Net OPEB liability  | 2,148,249,441   |
| Plan fiduciary net position as a percentage of the total OPEB liability | 0.0%            |

**Schedule of Employer Contributions**

|  |                   |
|--|-------------------|
| Actuarially determined contribution                              | 187,348,423       |
| Contributions related to the actuarially determined contribution | <u>47,454,621</u> |
| Contribution deficiency (excess)                                 | 139,893,802       |
| Covered-employee payroll   | \$1,602,986,483   |
| Contribution as a percent of payroll                             | 3.0%              |

**Schedule of Changes in Net OPEB Liability and Related Ratios**

| <b>Total OPEB liability</b>   | <b>December 31, 2017</b> |
|---|--------------------------|
| Service cost  | \$ 82,344,830            |
| Interest  | 84,911,522               |
| Changes of benefit terms  | (79,293,990)             |
| Differences between expected and actual experience                      | (55,814,160)             |
| Changes of assumptions or other inputs                                  | (66,330,809)             |
| Net benefit payments  | <u>(47,454,621)</u>      |
| Net change in total OPEB liability                                      | (81,637,228)             |
| Total OPEB liability-beginning  | 2,229,886,669            |
| Total OPEB liability-ending (a)   | \$2,148,249,441          |
| <b>Plan fiduciary net position</b>                                      |                          |
| Employer Contributions  | \$ 47,454,621            |
| Contributions- active members   | 0                        |
| Net investment income   | 0                        |
| Benefit payments  | (47,454,621)             |
| Administrative expenses   | 0                        |
| Other   | <u>0</u>                 |
| Net change in plan fiduciary net position                               | -                        |
| Plan fiduciary net position-beginning                                   | -                        |
| Plan fiduciary net position-ending (b)                                  | -                        |
| Client's net OPEB liability-ending (a)-(b)                              | \$2,148,249,441          |
| Plan fiduciary net position as a percentage of the total OPEB liability | 0.00%                    |
| Covered-employee payroll  | \$1,602,986,483          |
| Net OPEB liability as a percentage of covered-employee payroll          | 134.02%                  |

## ACTUARIAL SECTION

### Actuarial Valuation - Postemployment Healthcare (continued)

#### **GASB 74 Sensitivity of the Net OPEB Liability (Asset)**

**Sensitivity of the net OPEB liability to changes in the discount rate.** The following presents the net OPEB liability as of Dec. 31, 2017, calculated using the discount rate of 3.16%, as well as what the Plan's net OPEB liability would be if it were calculated using a discount rate that is 1-percentage-point lower (2.16%) or 1-percentage-point higher (4.16%) than the current rate::

| <b>Sensitivity of the Net OPEB<br/>Liability to Changes in the Discount Rate</b> | <b>1% Decrease<br/>2.16%</b> | <b>Current<br/>Discount Rate<br/>3.16%</b> | <b>1% Increase<br/>4.16%</b> |
|--|------------------------------|--|------------------------------|
| Net OPEB liability   | \$2,532,858,758              | \$2,148,249,441                            | \$1,842,064,933              |

**Sensitivity of the net OPEB liability to changes in the healthcare cost trend rates.** The following presents the net OPEB liability as of Dec. 31, 2017, calculated using the healthcare cost trend rates as summarized in this report, as well as what the Plan's net OPEB liability would be if it were calculated using trend rates that are 1-percentage-point lower or 1-percentage-point higher than the current healthcare cost trend rates:

| <b>Sensitivity of the Net OPEB Liability to<br/>Changes in the Healthcare Cost Trend Rate</b> | <b>1% Decrease</b> | <b>Current<br/>Trend Rate</b> | <b>1% Increase</b> |
|---|--------------------|-------------------------------|--------------------|
| Net OPEB liability  | \$1,805,019,432    | \$2,148,249,441               | \$2,593,628,968    |

## GASB 75 Expense and Schedule of Deferred Inflows and Outflows

### Components of OPEB Expense for the Fiscal Year Ended December 31, 2017

|  |                     |
|--|---------------------|
| Service cost   | \$82,344,830        |
| Interest on the total OPEB liability and net cash flow                     | 84,911,522          |
| Projected earnings on OPEB plan investments                                | 0                   |
| Current period effect of benefit changes                                   | (79,293,990)        |
| Current period difference between expected and actual experience           | (8,560,454)         |
| Current period effect of changes in assumptions                            | (10,173,437)        |
| Current period difference between projected and actual investment earnings | 0                   |
| Member contributions   | 0                   |
| OPEB plan investment expenses  | 0                   |
| Current period recognition of prior years' deferred outflows of resources  | 0                   |
| Current period recognition of prior years' deferred inflows of resources   | 0                   |
| <b>Total OPEB expense</b>  | <b>\$69,228,471</b> |

**ACTUARIAL SECTION**

**Actuarial Valuation - Postemployment Healthcare (continued)**

**GASB 75 Expense and Schedule of Deferred Inflows and Outflows**

Deferred outflows and inflows of resources will be recognized in OPEB expense as follows:

| <b>Fiscal Year Ending</b> | <b>2017</b>    | <b>2016</b>    |
|---------------------------|----------------|----------------|
| Amount established        | \$(55,814,160) | \$(66,330,809) |
| Recognition Period        | 6.52           | 6.52           |

| <b>Amount recognized in FY</b>   | <b>Differences between expected<br/>and actual experience</b> | <b>Change in Assumptions<br/>or Other Inputs</b> | <b>Total</b>    |
|----------------------------------|---|--|-----------------|
| 2017                             | \$ (8,560,454)  | \$(10,173,437)                                   | \$ (18,733,891) |
| 2018                             | (8,560,454)   | (10,173,437)                                     | (18,733,891)    |
| 2019                             | (8,560,454)   | (10,173,437)                                     | (18,733,891)    |
| 2020                             | (8,560,454)   | (10,173,437)                                     | (18,733,891)    |
| 2021                             | (8,560,454)   | (10,173,437)                                     | (18,733,891)    |
| 2022                             | (8,560,454)   | (10,173,437)                                     | (18,733,891)    |
| 2023                             | (4,451,436)   | (5,290,187)                                      | ( 9,741,623)    |
| <b>Deferred Balance at 12/31</b> |   |  |                 |
| 2017                             | \$(47,253,706)  | \$(56,157,372)                                   | \$(103,411,078) |
| 2018                             | (38,693,252)  | (45,983,935)                                     | (84,677,187)    |
| 2019                             | (30,132,798)  | (35,810,498)                                     | (65,943,296)    |
| 2020                             | (21,572,344)  | (25,637,061)                                     | (47,209,405)    |
| 2021                             | (13,011,890)  | (15,463,624)                                     | (28,475,514)    |
| 2022                             | (4,451,436)   | (5,290,187)                                      | (9,741,623)     |
| 2023                             | -   | -  | -               |



## Summary of Substantive Plan Provisions

### Eligibility

Tier 1 retirement (hired before January 1, 2011)

- Age 50 and 10 years of service

Tier 2 retirement (hired on or after January 1, 2011)

- Age 62 and 10 years of service

All active employee members who separate with 10 or more years of service can receive postretirement health benefits under the Plan upon receipt of annuity benefits, provided that if they elect to retire under the Illinois Reciprocal Act, CEABF is their final retirement system.

Surviving dependents of actively employed members and surviving dependents of covered annuitants are eligible for postretirement health benefits under the Plan upon receipt of annuity benefits.

Eligible annuitants may cover their spouses and dependent children under the age of 26 and all disabled children (no age limitation if covered prior to age 26).

### Medical Plans

Non-Medicare retirees can choose from:

- United Healthcare Choice HMO
- United Healthcare Choice Plus PPO

Medicare eligible retirees can choose from:

- United Healthcare Choice HMO
- United Healthcare Choice Plus PPO

All Medicare plans are supplemental to Medicare Part A & B benefits.

A retail and mail pharmacy benefit through CVS/Caremark is included with the election of any medical plan.

## ACTUARIAL SECTION

### Actuarial Valuation - Postemployment Healthcare (continued)

#### Summary of Substantive Plan Provisions (continued)

**Contributions** CEABF pays the following percentage of the total premium, including the cost of family coverage:

|                                  | <u>Choice HMO</u> | <u>Choice Plus PPO</u> |
|----------------------------------|-------------------|------------------------|
| Retiree Annuitant w/o Medicare   | 50%               | 45%                    |
| Retiree Annuitant with Medicare  | 50%               | 50%                    |
| Survivor Annuitant w/o Medicare  | 65%               | 60%                    |
| Survivor Annuitant with Medicare | 65%               | 65%                    |

The following are the annual working rates effective January 1, 2018. These rates represent the estimated cost of self-insured coverage and include administrative expenses.

|                     | <u>Choice HMO</u> | <u>Choice Plus PPO</u> |
|---------------------|-------------------|------------------------|
| Single w/o Medicare | \$ 15,552         | \$19,396               |
| Two w/o Medicare    | \$ 31,104         | \$38,792               |
| Single w/ Medicare  | \$ 5,760          | \$ 5,520               |
| Two w/ Medicare     | \$11,520          | \$11,040               |

## Assumptions and Methods

The actuarial assumptions used for the December 31, 2017 actuarial valuation are summarized below. The mortality rate, termination rate, retirement rate, salary, inflation, participation, and Medicare primary assumptions are based on an experience analysis of CEABF, over the period 2013 through 2016. These assumptions were adopted by the Board on April 5, 2018. Per capita cost and medical trend rate assumptions are revisited annually.

**Valuation Date** December 31, 2017

**Discount Rate** GASB 45 - 4.00% (changed from 4.50% used for the prior year)  
 GASB 74 - 3.16% at 12/31/2017 (using 12/31/2017 Municipal Bond Index rate)  
 GASB 74 - 3.71% at 12/31/2016 (using 12/31/2016 Municipal Bond Index rate)

Benefit payments are funded on a pay-as-you go basis. The discount rate is the single equivalent rate which results in the same present value as discounting future benefit payments made from assets at the long term expected rate of return and discounting future benefit payments funded on a pay-as-you-go basis on the municipal bond 20-year index rate.

| <b>Salary Scale</b> | <b><u>Age</u></b> | <b><u>Total</u></b> | <b><u>Age</u></b> | <b><u>Total</u></b> |
|---------------------|-------------------|---------------------|-------------------|---------------------|
|                     | <24               | 8.00%               | 35                | 5.50%               |
|                     | 25                | 7.60%               | 36                | 5.25%               |
|                     | 26                | 7.20%               | 37                | 5.00%               |
|                     | 27                | 7.20%               | 38                | 4.75%               |
|                     | 28                | 7.20%               | 39                | 4.40%               |
|                     | 29                | 7.00%               | 40                | 4.25%               |
|                     | 30                | 7.00%               | 41                | 4.00%               |
|                     | 31                | 6.50%               | 42                | 4.00%               |
|                     | 32                | 6.25%               | 43                | 3.90%               |
|                     | 33                | 5.75%               | 44                | 3.80%               |
|                     | 34                | 5.75%               | 45+               | 3.50%               |

**Inflation** 2.75%

**ACTUARIAL SECTION**

**Actuarial Valuation - Postemployment Healthcare (continued)**

**Assumptions and Methods (continued)**

**Termination Rates** The following is a sample of the termination rates used:

| <u>Attained</u><br><u>Age</u> | <u>Age at Entrance</u> |           |           |                |           |           |
|-------------------------------|------------------------|-----------|-----------|----------------|-----------|-----------|
|                               | <u>Males</u>           |           |           | <u>Females</u> |           |           |
|                               | <u>27</u>              | <u>32</u> | <u>37</u> | <u>27</u>      | <u>32</u> | <u>37</u> |
| 27                            | .174                   |           |           | .161           |           |           |
| 32                            | .117                   | .140      |           | .128           | .158      |           |
| 37                            | .037                   | .093      | .200      | .033           | .096      | .200      |
| 42                            | .037                   | .034      | .070      | .033           | .034      | .056      |
| 47                            | .037                   | .034      | .025      | .033           | .034      | .026      |

**Retirement Rates** For deputy sheriffs who are members of the Cook County Police department who became participants prior to January 1, 2011 (Tier 1):

| <u>Service at retirement</u><br><u>Age</u> | <u>&lt; 20 Years</u> |               | <u>≥20 Years</u> |               |
|--|----------------------|---------------|------------------|---------------|
|  | <u>Male</u>          | <u>Female</u> | <u>Male</u>      | <u>Female</u> |
| 50   | .025                 | .000          | .100             | .100          |
| 55   | .040                 | .045          | .100             | .100          |
| 60   | .150                 | .150          | .350             | .350          |
| 65   | .200                 | .220          | 1.000            | 1.000         |
| 70   | .250                 | .240          | 1.000            | 1.000         |
| 75   | .300                 | .250          | 1.000            | 1.000         |
| 80   | 1.000                | 1.000         | 1.000            | 1.000         |

For other members who became participants on or after January 1, 2011 (Tier 1):

| <u>Service at retirement</u><br><u>Age</u> | <u>&lt; 30 Years</u> |               | <u>≥30 Years</u> |               |
|--|----------------------|---------------|------------------|---------------|
|  | <u>Male</u>          | <u>Female</u> | <u>Male</u>      | <u>Female</u> |
| 50   | .025                 | .000          | .000             | .000          |
| 55   | .040                 | .045          | .300             | .300          |
| 60   | .150                 | .150          | .250             | .350          |
| 65   | .200                 | .220          | .200             | .350          |
| 70   | .250                 | .240          | .350             | .350          |
| 75   | .300                 | .250          | .750             | .300          |
| 80   | 1.000                | 1.000         | 1.000            | 1.000         |

**Assumptions and Methods (continued)**

For members who became participants on or after January 1, 2011 (Tier 2):

| <u>Age</u> | <u>Male</u> | <u>Female</u> |
|------------|-------------|---------------|
| 62         | .400        | .350          |
| 64         | .225        | .150          |
| 67         | .400        | .350          |
| 70         | .450        | .200          |
| 75         | 1.000       | 1.000         |

**Mortality Rates** The RP-2014 Blue Collar table with the following adjustments:  
 Pre-commencement: adjust all rates by 75%  
 Post-commencement: adjust rates as follows:

| <u>Age</u>   | <u>Adjustment Factor</u> |
|--------------|--------------------------|
| Less than 50 | No adjustment            |
| 50 - 64      | 150%                     |
| 65-69        | 130%                     |
| 70-79        | 110%                     |
| 80 and over  | No adjustment            |

Fully generational mortality improvement projection assumptions are applied to the above table from base year 2006 using the Conduent Modified MP-2017 projection scale. The substantive difference between the Conduent scale and that published by the SOA is that the Conduent scale reaches an ultimate improvement rate of 0.75% versus the SOA's scale which reaches an ultimate improvement rate of 1.0%.

**Disability Rates** Included in termination and retirement rates.

**Anticipated Plan Participation** 65% of eligible employees are assumed to elect retiree medical benefits.  
 40% of vested terminated employees are assumed to elect retiree medical benefits upon retirement, and are assumed to retire at age 61.

Based on recent experience, future annuitants are assumed to elect from among the available plans as follows:

| <u>% Who Elect</u> | <u>Choice HMO</u> | <u>Choice Plus PPO</u> |
|--------------------|-------------------|------------------------|
| Pre-Medicare       | 95%               | 5%                     |
| Post-Medicare      | 77%               | 23%                    |

Current annuitants who elect coverage are assumed to remain in coverage. Current annuitants who have waived or deferred coverage are not assumed to participate in the future.

**ACTUARIAL SECTION**

**Actuarial Valuation - Postemployment Healthcare (continued)**

**Assumptions and Methods (continued)**

**Dependent Coverage** 35% of future annuitants are assumed to cover a dependent. 35% of surviving dependents are assumed to elect coverage upon the death of an actively employed member and are assumed to commence benefits when the actively employed member would have reached age 61. Males are assumed to be 4 years older than females. Actual ages were used for dependents of current annuitants.

**Medicare Coordination** Medicare is assumed to remain the primary payer for current and future retirees and spouses who are at least age 65 and who are currently on Medicare. Medicare is assumed to become primary for 95% of retirees and spouses who retired before January 1, 2014 and who are not yet age 65, when they attain that age. For all other retirees and spouses, Medicare is assumed to be the primary payer at the time they reach age 65.

**Per Capita Health Plan Costs** Estimated net annual per capita incurred claim costs per covered adult for fiscal 2017 at age 65, reflecting administrative expenses, drug rebates, and the Retiree Drug Subsidy.

|                       | <u>Choice HMO</u> | <u>Choice Plus PPO</u> |
|-----------------------|-------------------|------------------------|
| Not Medicare eligible | \$18,600          | \$22,872               |
| Medicare eligible     | \$ 4,608          | \$ 4,260               |

Per capita medical costs were developed using claims and enrollment for the period from January 1, 2016 through December 31, 2017 provided by the Fund. The resulting costs were adjusted for age morbidity.

The valuation relies on the accuracy of the rate calculations. We understand that the rates represent medical and prescription drug benefit costs only for annuitants under the Fund.

**Assumptions and Methods (continued)**

**Age-Based  
Morbidity**

Per capita costs are adjusted to reflect expected cost differences due to age and gender. The morbidity factors for pre-Medicare morbidity were developed from “Health Care Costs—From Birth to Death” sponsored by the Society of Actuaries and prepared by Dale H. Yamamoto (May 2013). Table 4 from Mr. Yamamoto’s study formed the basis of Medicare morbidity factors that are gender distinct and assumed a cost allocation of 60% for pharmacy, 20% for inpatient, 10% for outpatient, and 10% for professional services. Adjustments were made to Table 4 factors for inpatient costs at age 70 and below to smooth out what appears to be a spike in utilization for Medicare retirees gaining healthcare for the first time through Medicare. While such retirees were included in the study, their specific experience is not applicable for a valuation of an employer retiree medical plan where participants had group active coverage before retirement. Morbidity factors at sample ages are shown below:

| <u>Age</u> | <u>Male</u> | <u>Female</u> |
|------------|-------------|---------------|
| 50         | 0.4612      | 0.5736        |
| 55         | 0.6085      | 0.6667        |
| 60         | 0.7829      | 0.7791        |
| 65         | 1.0000      | 0.9438        |
| 70         | 1.1873      | 1.1094        |
| 75         | 1.2752      | 1.2009        |
| 80         | 1.3381      | 1.2697        |
| 85         | 1.3479      | 1.3171        |
| 90         | 1.3235      | 1.3303        |

**Health Care Cost  
Trend Rates**

Health care cost trend rates apply to expected claims, premiums and retiree contributions:

| <u>Year</u> | <u>Pre-Medicare</u> | <u>Post-Medicare</u> |
|-------------|---------------------|----------------------|
| 2018        | 7.25%               | 5.75%                |
| 2019        | 7.00%               | 5.50%                |
| 2020        | 6.75%               | 5.25%                |
| 2021        | 6.50%               | 5.00%                |
| 2022        | 6.25%               | 4.75%                |
| 2023        | 6.00%               | 4.75%                |
| 2024        | 5.75%               | 4.75%                |
| 2025        | 5.50%               | 4.75%                |
| 2026        | 5.25%               | 4.75%                |
| 2027        | 5.00%               | 4.75%                |
| 2028+       | 4.75%               | 4.75%                |

## ACTUARIAL SECTION

### Actuarial Valuation - Postemployment Healthcare (continued)

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#### Assumptions and Methods (continued)

|  |   |
|--|---|
| <b>Census Data</b>                     | The active, deferred vested, and retiree census were provided by the Fund.  |
| <b>Actuarial Cost Method</b>           |   |
| - <b>GASB 45</b>                       | The entry age actuarial cost as a percentage of earnings was used.  |
| - <b>GASB 74</b>                       | Entry age normal, level percent of pay. Service costs are attributed through all assumed ages of exit from active service.                    |
| <b>GASB 45<br/>Amortization Method</b> | 30 years open, level dollar.  |
| <b>Assets</b>                          | The valuation assumes CEABF has not set aside any assets to prefund its retiree medical liabilities.  |
| <b>IBNR</b>                            | The calculations do not include any explicit amount for incurred but not reported claims (IBNR).  |
| <b>Retiree Drug Subsidy</b>            | CEABF will no longer be receiving the Retiree Drug Subsidy due to their switch to an EGWP plan effective January 1, 2017.                     |
| <b>Miscellaneous</b>                   | The valuation was prepared on an on-going plan basis. This assumption does not imply that an obligation to continue the plan actually exists. |



## Assumptions and Methods (continued)

### Considerations of the Patient Protection and Affordable Care Act (PPACA)

#### Summary of Effects of Selected Provisions

**Expansion of Child Coverage to Age 26:** The impact of covering retiree children to age 26 is assumed to have already been reflected in the working rates provided and in the claims experience.

**Medicare Part D Retiree Drug Subsidy:** CEABF will no longer be receiving the Retiree Drug Subsidy due to their switch to an EGWP plan effective January 1, 2017.

**Excise Tax on High-Cost Employer Health Plans (aka “Cadillac Tax”)** - Health Care Reform includes various revenue raisers. One of the more complex revenue raisers is the High Cost Plan Excise Tax, also known as the Cadillac Tax. While its stated intent is to tax only high cost plans that provide what might be considered “Cadillac” benefits, as legislated, it is likely to have much broader impact. The tax limits above which the benefits are taxed increase only at Chained CPI (assumed to be 2.48% in this valuation) while we continue to assume that health care costs will increase faster, reflecting real growth in GDP and technology innovations. Given that assumption, any health benefit, no matter how frugal initially, will ultimately be assumed to cost more than the limit resulting in a tax. Based on our understanding of the tax, we think it is clear that the tax does not apply directly to CEABF. Rather, the tax applies to the administrator of the benefits, which in turn is then expected to pass the additional cost along to CEABF. We assume that the cost of any Cadillac tax will be included in the form of higher premiums, and have estimated the impact by use of a higher “loaded” trend rate assumption for premiums that apply up to the maximum reimbursement amounts. This resulted in an approximate increase of 3.9% to liabilities. On January 22, 2018, the Budget Continuing Resolution was signed. This resolution deferred the application of the Cadillac tax from 2020 to 2022. This delay has been reflected in the measurement of the benefit obligation.

The tax is 40% of the excess of a) the cost of coverage over b) the limit. We modeled the cost of the tax by calculating “a” (the cost of coverage) using the working rates projected with trend. We calculated “b” (the limit) starting with the statutory limits (\$10,200 single and \$27,500 family), adjusted for the following:

- Limits will increase from 2018 to 2019 by Chained CPI plus 1%;
- Limits will increase after 2019 by Chained CPI; and
- For retirees over age 55 but not on Medicare, the limit is increased by an additional dollar amount of \$1,650 for single coverage, \$3,450 for family coverage.

We also examined the possibility that the limits would be increased due to excess trend. An estimate of trend for the period from 2010 through 2018 for the federal standard Blue Cross Blue Shield option (using actual increase rates from 2010 to 2017 and the valuation trend from 2017 to 2018) is compared to the statutory “assumed” 55% trend, with trend in excess of 55% applied on the base amount before the additional amount for “early” retirees. However, it appears due to favorable experience in the federal benchmark Blue Cross Blue Shield plan that there will not be any excess trend.

## ACTUARIAL SECTION

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### Actuarial Valuation - Postemployment Healthcare (continued)

#### Assumptions and Methods (continued)

**Other Revenue Raisers:** The PPACA legislation includes a variety of other revenue raisers that involve additional costs on employers, providers (such as medical device manufacturers) and insurers. We considered these factors when developing the trend assumption used.

**Other:** We have not identified any other specific provision of the PPACA legislation that would be expected to have a significant impact on the measured obligation. As additional guidance on the legislation is issued, we will continue to monitor any potential impacts.

## Description of Actuarial Methods and Valuation Procedures

### Actuarial Cost Method

Liabilities and contributions shown in this report are computed using the **Entry Age Actuarial Cost Method** of funding.

Sometimes called a “funding method,” this is a particular technique used by actuaries for establishing the amount and incidence of the annual actuarial cost of pension plan benefits, or normal cost, and the related unfunded actuarial accrued liability. Ordinarily the annual contribution to the plan is comprised of (1) the normal cost and (2) an amortization payment on the unfunded actuarial accrued liability.

Under the Entry Age Actuarial Cost Method, the **Normal Cost** is computed as the level percentage of pay which, if paid from the earliest time each Member would have been eligible to join the Plan if it then existed (thus, entry age) until his retirement or termination, would accumulate with interest at the rate assumed in the valuation to a fund sufficient to pay all benefits under the Plan.

The **Actuarial Accrued Liability** under this method at any point in time is the theoretical amount of funding that would have accumulated had annual contributions equal to the Normal Cost been made in prior years (it does not represent the liability for benefits accrued to the valuation date).

The **Unfunded Actuarial Accrued Liability** is the excess of the Actuarial Accrued Liability over the Actuarial Value of Plan Assets actually on hand on the valuation date. The Unfunded Actuarial Accrued Liability is amortized as a level dollar amount over an open 30-year period.

Under this method experience gains or losses, i.e. decreases or increases in accrued liabilities attributable to deviations in experience from the actuarial assumptions, adjust the Unfunded Actuarial Accrued Liability.

## Glossary of Terms

***Actuarially determined contribution***

A target or recommended contribution to a defined benefit OPEB plan for the reporting period, determined in conformity with Actuarial Standards of Practice based on the most recent measurement available when the contribution for the reporting period was adopted.

***Actuarial present value of projected benefit payments***

Projected benefit payments discounted to reflect the expected effects of the time value (present value) of money and the probabilities of payment.

***Actuarial valuation***

The determination, as of a point in time (the actuarial valuation date), of the service cost, total OPEB liability, and related actuarial present value of projected benefit payments for OPEB performed in conformity with Actuarial Standards of Practice unless otherwise specified by the GASB.

***Actuarial valuation date***

The date as of which an actuarial valuation is performed.

***Ad hoc postemployment benefit changes***

Postemployment benefit changes that require a decision to grant by the authority responsible for making such decisions.

***Automatic hoc postemployment benefit changes***

Postemployment benefit changes that occur without a requirement for a decision to grant by a responsible authority.

***Covered-employee payroll***

The payroll for employees that are provided with OPEB through the OPEB plan.

***Discount rate***

The single rate of return that, when applied to all projected benefit payments, results in an actuarial present value of projected benefit payments equal to the total of the following:

- a. The actuarial present value of benefit payments projected to be made in future periods in which (1) the amount of the OPEB plan's fiduciary net position is projected (under the requirements of this Statement) to be greater than the benefit payments that are projected to be made in that period and (2) OPEB plan assets up to that point are expected to be invested using a strategy to achieve the long-term expected rate of return, calculated using the long-term expected rate of return on OPEB plan investments.
- b. The actuarial present value of projected benefit payments not included in (a), calculated using a yield or index rate for 20-year, tax-exempt general obligation municipal bonds with an average rating of AA/Aa or higher (or equivalent quality on another rating scale).

## Glossary of Terms

### ***Entry age actuarial cost method***

A method under which the actuarial present value of the projected benefits of each individual included in an actuarial valuation is allocated on a level basis over the earnings or service of the individual between entry age and assumed exit age(s). The portion of this actuarial present value allocated to a valuation year is called the normal cost. The portion of this actuarial present value not provided for at a valuation date by the actuarial present value of future normal costs is called the Actuarial accrued liability.

### ***Healthcare cost trend rates***

The rates of change in per capita health claims costs over time as a result of factors such as medical inflation, utilization of healthcare services, plan design, and technological developments.

### ***Inactive employees***

Individuals no longer employed by an employer in the OPEB plan, or the beneficiaries of those individuals. Inactive employees include individuals who have accumulated benefits under the terms of an OPEB plan but are not yet receiving benefit payments and individuals currently receiving benefits.

### ***Measurement period***

The period between the prior and the current measurement dates.

### ***Net OPEB liability***

The liability of employers and non-employer contributing entities to employees for benefits provided through a defined benefit OPEB plan that is administered through a trust that meets the criteria in paragraph 4 of this Statement. Other postemployment benefits (OPEB) Benefits (such as death benefits, life insurance, disability, and long-term care) that are paid in the period after employment and that are provided separately from a pension plan, as well as healthcare benefits paid in the period after employment, regardless of the manner in which they are provided. OPEB does not include termination benefits or termination payments for sick leave.

### ***Projected benefit payments***

All benefits (including refunds of employee contributions) estimated to be payable through the OPEB plan (including amounts to be paid by employers or non-employer contributing entities as the benefits come due) to current active and inactive employees as a result of their past service and their expected future service.

### ***Real rate of return***

The rate of return on an investment after adjustment to eliminate inflation.

### ***Service costs***

The portions of the actuarial present value of projected benefit payments that are attributed to valuation years.

### ***Total OPEB liability***

The portion of the actuarial present value of projected benefit payments that is attributed to past periods of employee service.

# Additional Actuarial Tables

## Schedule of Active Member Valuation Data - Pension Benefits

| <u>Valuation Date</u> | <u>Number</u> | <u>Annual Payroll</u> | <u>Annual Average Pay</u> | <u>% Increase In Average Pay</u> |
|-----------------------|---------------|-----------------------|---------------------------|----------------------------------|
| 12/31/08              | 23,436        | \$1,463,372,408       | \$62,441                  | 6.8%                             |
| 12/31/09              | 23,570        | 1,498,161,713         | 63,562                    | 1.8%                             |
| 12/31/10              | 23,165        | 1,494,093,569         | 64,498                    | 1.5%                             |
| 12/31/11              | 22,037        | 1,456,444,123         | 66,091                    | 2.5%                             |
| 12/31/12              | 21,447        | 1,478,253,368         | 68,926                    | 4.3%                             |
| 12/31/13              | 21,287        | 1,484,269,715         | 69,727                    | 1.2%                             |
| 12/31/14              | 21,656        | 1,514,550,023         | 69,937                    | 0.3%                             |
| 12/31/15              | 21,596        | 1,572,417,298         | 72,811                    | 4.1%                             |
| 12/31/16              | 20,969        | 1,580,251,254         | 75,361                    | 3.5%                             |
| 12/31/17              | 20,349        | 1,567,480,401         | 77,030                    | 2.2%                             |

## Schedule of Retirees and Beneficiaries Added to and Removed from Rolls - Pension Benefits

| <u>Year Ended</u> | <u>Added to Rolls</u> |                        | <u>Removed from Rolls</u> |                        | <u>End of Year Rolls</u> |                        | <u>Average Annual Benefit</u> | <u>% Increase in Average Annual Benefit</u> |
|-------------------|-----------------------|------------------------|---------------------------|------------------------|--------------------------|------------------------|-------------------------------|---|
|                   | <u>Number</u>         | <u>Annual Benefits</u> | <u>Number</u>             | <u>Annual Benefits</u> | <u>Number</u>            | <u>Annual Benefits</u> |                               |   |
| 2008              | 791                   | \$32,064,586           | 517                       | \$ 8,641,406           | 14,292                   | \$373,429,034          | \$26,129                      | 4.6%  |
| 2009              | 693                   | 43,524,587             | 510                       | 9,455,204              | 14,475                   | 407,498,417            | 28,152                        | 7.7%  |
| 2010              | 917                   | 40,259,064             | 538                       | 10,616,859             | 14,854                   | 437,140,622            | 29,429                        | 4.5%  |
| 2011              | 1,158                 | 55,308,088             | 580                       | 12,124,191             | 15,432                   | 480,324,519            | 31,125                        | 5.8%  |
| 2012              | 1,374                 | 58,601,319             | 632                       | 14,697,753             | 16,174                   | 524,228,085            | 32,412                        | 4.1%  |
| 2013              | 992                   | 52,564,737             | 489                       | 10,006,848             | 16,677                   | 566,785,974            | 33,986                        | 4.9%  |
| 2014              | 929                   | 52,208,075             | 530                       | 11,628,617             | 17,076                   | 607,365,432            | 35,568                        | 4.7%  |
| 2015              | 1,323                 | 69,890,199             | 802                       | 22,262,895             | 17,597                   | 654,992,736            | 37,222                        | 4.7%  |
| 2016              | 968                   | 58,252,392             | 656                       | 18,067,979             | 17,909                   | 695,177,149            | 38,817                        | 4.3%  |
| 2017              | 902                   | 57,971,733             | 594                       | 16,538,820             | 18,217                   | 736,610,062            | 40,435                        | 4.2%  |

## Schedule of Retirees and Beneficiaries Added to and Removed from Rolls - Postemployment Healthcare

| <u>Year Ended</u> | <u>Added to Rolls</u> |                        | <u>Removed from Rolls</u> |                        | <u>End of Year Rolls</u> |                        | <u>Average Annual Benefit</u> | <u>% Change in Average Annual Benefit</u> |
|-------------------|-----------------------|------------------------|---------------------------|------------------------|--------------------------|------------------------|-------------------------------|---|
|                   | <u>Number</u>         | <u>Annual Benefits</u> | <u>Number</u>             | <u>Annual Benefits</u> | <u>Number</u>            | <u>Annual Benefits</u> |                               |   |
| 2012              | 640                   | \$ 3,715,909           | 386                       | \$6,655,532            | 8,179                    | \$43,964,717           | \$5,375                       | -9.2%                                     |
| 2013              | 703                   | 3,970,847              | 346                       | 3,986,309              | 8,536                    | 43,949,255             | 5,149                         | -4.2%                                     |
| 2014              | 556                   | 2,308,094              | 501                       | 2,229,694              | 8,591                    | 48,487,043             | 5,644                         | 9.6%                                      |
| 2015              | 631                   | 8,261,563              | 439                       | 2,119,662              | 8,783                    | 54,628,944             | 6,220                         | 10.2%                                     |
| 2016              | 570                   | 989,701                | 399                       | 1,962,607              | 8,954                    | 53,656,038             | 5,992                         | -3.7%                                     |
| 2017              | 540                   | (3,945,464)            | 497                       | 2,255,953              | 8,997                    | 47,454,621             | 5,275                         | -12.0%                                    |

## Solvency Test - Pension Benefits

| Year Ended | Accrued Liabilities for                                      |   |  |                           | Percent of Accrued Liabilities Covered by Assets |      |     |
|------------|--|---|--|---------------------------|--|------|-----|
|            | (1)<br>Active and Inactive Members Accumulated Contributions | (2)<br>Members Currently Receiving Benefits | (3)<br>Active and Inactive Member Employer Portion | Actuarial Value of Assets | (1)  | (2)  | (3) |
| 2008       | \$1,650,186,209  | \$4,258,683,439                             | \$4,188,158,217                                    | \$8,036,074,797           | 100%   | 100% | 51% |
| 2009       | 1,749,058,834  | 5,043,516,963                               | 4,696,505,501                                      | 7,945,567,096             | 100%   | 100% | 25% |
| 2010       | 1,824,472,753  | 5,373,790,587                               | 4,824,959,545                                      | 7,982,368,659             | 100%   | 100% | 16% |
| 2011       | 1,662,273,117  | 5,902,779,764                               | 5,063,221,680                                      | 7,897,102,116             | 100%   | 100% | 7%  |
| 2012       | 1,821,792,594  | 6,431,295,762                               | 5,168,398,587                                      | 7,833,882,926             | 100%   | 93%  | 0%  |
| 2013       | 1,854,155,647  | 6,822,552,230                               | 4,959,868,300                                      | 8,381,444,287             | 100%   | 96%  | 0%  |
| 2014       | 1,897,951,260  | 7,295,515,219                               | 4,947,080,874                                      | 8,810,509,070             | 100%   | 95%  | 0%  |
| 2015       | 1,914,569,837  | 7,864,534,443                               | 5,157,487,056                                      | 8,991,018,918             | 100%   | 90%  | 0%  |
| 2016       | 1,967,965,799  | 8,305,339,574                               | 5,183,468,612                                      | 9,488,223,349             | 100%   | 91%  | 0%  |
| 2017       | 2,001,714,113  | 8,583,373,041                               | 5,086,669,289                                      | 10,148,203,834            | 100%   | 95%  | 0%  |

## Solvency Test - Postemployment Healthcare

| Year Ended | Accrued Liabilities for                                      |   |  |                           | Percent of Accrued Liabilities Covered by Assets |     |     |
|------------|--|---|--|---------------------------|--|-----|-----|
|            | (1)<br>Active and Inactive Members Accumulated Contributions | (2)<br>Members Currently Receiving Benefits | (3)<br>Active and Inactive Member Employer Portion | Actuarial Value of Assets | (1)  | (2) | (3) |
| 2012       | \$ -   | \$776,395,244                               | \$1,069,213,888                                    | \$ -                      | 0%   | 0%  | 0%  |
| 2013       | -  | 818,201,554                                 | 1,160,565,936                                      | -                         | 0%   | 0%  | 0%  |
| 2014       | -  | 826,052,274                                 | 1,154,036,343                                      | -                         | 0%   | 0%  | 0%  |
| 2015       | -  | 879,319,447                                 | 1,254,787,260                                      | -                         | 0%   | 0%  | 0%  |
| 2016       | -  | 825,328,625                                 | 1,132,476,063                                      | -                         | 0%   | 0%  | 0%  |
| 2017       | -  | 811,486,860                                 | 1,075,129,583                                      | -                         | 0%   | 0%  | 0%  |

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# Statistical Section

*This section contains additional schedules that are designed to supplement the information in the Comprehensive Annual Financial Report:*

*Statements of Changes in Plan Net Position – Pension Benefits and Postemployment Healthcare provides details on the specific sources and uses of funds.*

*Schedules of Retired Members by Benefit Type – Pension Benefits and Postemployment Healthcare provides details on the monthly pension amounts for retirement and survivor members, including those with postemployment healthcare.*

*Schedule of Average Benefit Payments – Pension Benefits and Postemployment Healthcare provides details on years of credited service, average monthly pension, average monthly final average salary, and the number of new retirees, including those with postemployment healthcare.*

*Schedule of Principal Participating Employers – Pension Benefits and Postemployment Healthcare provides details on employers who participate in the Plan.*

*Additional Schedules Required by Employer provides details on historical financial, investment and actuarial performance.*

# Statement of Changes in Pension Plan Fiduciary Net Position

For year ended December 31, 2017, with comparative totals for 9 years

|   | <u>2017</u>             | <u>2016</u>            | <u>2015</u>            | <u>2014</u>            | <u>2013</u>            |
|---|-------------------------|------------------------|------------------------|------------------------|------------------------|
| Additions:                                    |                         |                        |                        |                        |                        |
| Employer contributions                        | \$ 511,750,985          | \$ 414,703,155         | \$ 136,075,504         | \$ 146,075,414         | \$ 147,720,014         |
| Employee contributions                        | 138,826,184             | 139,355,592            | 137,707,719            | 129,325,318            | 127,593,220            |
| Net investment and net securities             |                         |                        |                        |                        |                        |
| lending income (loss)                         | 1,399,625,874           | 629,442,470            | (21,896,696)           | 488,890,897            | 1,179,440,119          |
| Other   | <u>5,359,418</u>        | <u>4,046,158</u>       | <u>4,380,293</u>       | <u>3,753,960</u>       | <u>4,041,145</u>       |
| Total additions                               | <u>2,055,562,461</u>    | <u>1,187,547,375</u>   | <u>256,266,820</u>     | <u>768,045,589</u>     | <u>1,458,794,498</u>   |
| Deductions:                                   |                         |                        |                        |                        |                        |
| Benefits                                      |                         |                        |                        |                        |                        |
| Retirement                                    | 661,594,080             | 624,231,419            | 587,861,744            | 543,274,840            | 507,494,409            |
| Survivors                                     | 51,874,102              | 47,919,324             | 45,002,859             | 41,865,298             | 38,761,919             |
| Disability                                    | 11,467,308              | 10,707,260             | 10,332,441             | 10,515,760             | 10,909,478             |
| Refunds                                       |                         |                        |                        |                        |                        |
| Death   | 4,511,674               | 2,792,846              | 4,983,186              | 3,187,363              | 3,461,166              |
| Separation                                    | 16,792,901              | 13,967,392             | 14,486,833             | 13,082,086             | 15,180,523             |
| Other   | 11,690,790              | 9,941,984              | 13,803,152             | 10,077,912             | 11,231,341             |
| Net administrative and miscellaneous expenses | <u>5,406,034</u>        | <u>5,373,555</u>       | <u>5,151,110</u>       | <u>5,010,206</u>       | <u>4,324,634</u>       |
| Total deductions                              | <u>763,336,888</u>      | <u>714,933,780</u>     | <u>681,621,325</u>     | <u>627,013,465</u>     | <u>591,363,470</u>     |
| Net increase (decrease)                       | 1,292,225,573           | 472,613,595            | (425,354,505)          | 141,032,124            | 867,431,028            |
| Net position:                                 |                         |                        |                        |                        |                        |
| Beginning of year                             | <u>9,115,657,870</u>    | <u>8,643,044,275</u>   | <u>9,068,398,780</u>   | <u>8,927,366,656</u>   | <u>8,059,935,628</u>   |
| End of year                                   | <u>\$10,407,883,443</u> | <u>\$9,115,657,870</u> | <u>\$8,643,044,275</u> | <u>\$9,068,398,780</u> | <u>\$8,927,366,656</u> |

Statement of Changes in Pension Plan Fiduciary Net Position (continued)

For year ended December 31, 2017, with comparative totals for 9 years (continued)

|   | <u>2012</u>            | <u>2011</u>            | <u>2010</u>            | <u>2009</u>            | <u>2008</u>            |
|---|------------------------|------------------------|------------------------|------------------------|------------------------|
| Additions:                                    |                        |                        |                        |                        |                        |
| Employer contributions                        | \$ 152,734,539         | \$ 162,667,160         | \$ 141,326,266         | \$ 147,934,643         | \$ 146,134,911         |
| Employee contributions                        | 128,869,508            | 127,577,473            | 129,449,866            | 127,795,881            | 123,776,705            |
| Net investment and net securities             |                        |                        |                        |                        |                        |
| lending income (loss)                         | 887,687,519            | 82,701,033             | 832,882,639            | 1,013,615,250          | (1,858,853,846)        |
| Other   | 4,212,209              | 3,380,437              | 8,248,307              | 6,087,899              | 4,382,353              |
| Total additions                               | <u>1,173,503,775</u>   | <u>376,326,103</u>     | <u>1,111,907,078</u>   | <u>1,295,433,673</u>   | <u>(1,584,559,877)</u> |
| Deductions:                                   |                        |                        |                        |                        |                        |
| Benefits                                      |                        |                        |                        |                        |                        |
| Retirement                                    | 469,398,775            | 429,527,599            | 393,525,707            | 369,226,987            | 347,922,288            |
| Survivors                                     | 35,762,286             | 33,003,057             | 30,307,794             | 27,837,079             | 25,815,860             |
| Disability                                    | 12,265,257             | 13,961,631             | 13,789,106             | 13,510,567             | 13,234,974             |
| Refunds                                       |                        |                        |                        |                        |                        |
| Death   | 4,636,647              | 3,036,462              | 5,569,966              | 3,424,156              | 3,565,245              |
| Separation                                    | 16,740,836             | 15,813,775             | 12,704,374             | 11,582,869             | 15,322,631             |
| Other   | 11,704,243             | 10,315,098             | 6,767,478              | 5,397,886              | 5,836,226              |
| Net administrative and miscellaneous expenses | 4,303,353              | 4,078,843              | 4,074,955              | 4,248,287              | 4,172,536              |
| Total deductions                              | <u>554,811,397</u>     | <u>509,736,465</u>     | <u>466,739,380</u>     | <u>435,227,831</u>     | <u>415,869,760</u>     |
| Net increase (decrease)                       | 618,692,378            | (133,410,362)          | 645,167,698            | 860,205,842            | (2,000,429,637)        |
| Net position:                                 |                        |                        |                        |                        |                        |
| Beginning of year                             | <u>7,441,243,250</u>   | <u>7,574,653,612</u>   | <u>6,929,485,914</u>   | <u>6,069,280,072</u>   | <u>8,069,709,709</u>   |
| End of year                                   | <u>\$8,059,935,628</u> | <u>\$7,441,243,250</u> | <u>\$7,574,653,612</u> | <u>\$6,929,485,914</u> | <u>\$6,069,280,072</u> |

# Statement of Changes in Postemployment Healthcare Plan Net Position

For year ended December 31, 2017, with comparative totals for 9 years

|  | <u>2017</u>       | <u>2016</u>        | <u>2015</u>       | <u>2014</u>       | <u>2013</u>       |
|--|-------------------|--------------------|-------------------|-------------------|-------------------|
| Additions:                                   |                   |                    |                   |                   |                   |
| Employer contributions                       | \$47,454,641      | \$49,565,249       | \$50,765,817      | \$43,957,458      | \$40,097,630      |
| Annuitant healthcare benefits contributions* | 17,962,395        | 41,650,333         | 37,635,349        | 37,358,502        | 35,927,206        |
| Other  | 65,417,036        | 9,973,182          | 7,077,550         | 5,988,102         | 4,506,584         |
| Total additions                              | <u>65,417,036</u> | <u>101,188,764</u> | <u>95,469,716</u> | <u>87,304,062</u> | <u>80,531,420</u> |
| Deductions:                                  |                   |                    |                   |                   |                   |
| Healthcare benefits                          | <u>65,417,036</u> | <u>101,188,764</u> | <u>95,469,716</u> | <u>87,304,062</u> | <u>80,531,420</u> |
| Net increase (decrease)                      | -                 | -                  | -                 | -                 | -                 |
| Net position:                                |                   |                    |                   |                   |                   |
| Beginning of year                            | <u>-</u>          | <u>-</u>           | <u>-</u>          | <u>-</u>          | <u>-</u>          |
| End of year                                  | <u>\$ -</u>       | <u>\$ -</u>        | <u>\$ -</u>       | <u>\$ -</u>       | <u>\$ -</u>       |

\* Beginning 2017, the annuitants Healthcare contribution (\$46,679,437 in CY 2017) is netted against Healthcare benefits expense.

Statement of Changes in Postemployment Healthcare Plan Net Position (continued)

For year ended December 31, 2017, with comparative totals for 9 years (continued)

|  | <u>2012</u>       | <u>2011</u>       | <u>2010</u>       | <u>2009</u>       | <u>2008</u>       |
|--|-------------------|-------------------|-------------------|-------------------|-------------------|
| Additions:                                     |                   |                   |                   |                   |                   |
| Employer contributions                         | \$37,986,237      | \$32,670,461      | \$40,183,057      | \$35,779,227      | \$37,781,310      |
| Annuitant healthcare<br>benefits contributions | 33,948,728        | 33,236,282        | 30,108,884        | 28,809,395        | 29,074,233        |
| Other  | 5,978,480         | 14,233,879        | 4,717,744         | 5,653,995         | 2,699,033         |
| Total additions                                | <u>77,913,445</u> | <u>80,140,622</u> | <u>75,009,685</u> | <u>70,242,617</u> | <u>69,554,576</u> |
| Deductions:                                    |                   |                   |                   |                   |                   |
| Healthcare benefits                            | <u>77,913,445</u> | <u>80,140,622</u> | <u>75,009,685</u> | <u>70,242,617</u> | <u>69,554,576</u> |
| Net increase (decrease)                        | -                 | -                 | -                 | -                 | -                 |
| Net position:                                  |                   |                   |                   |                   |                   |
| Beginning of year                              | -                 | -                 | -                 | -                 | -                 |
| End of year                                    | <u>\$ -</u>       | <u>\$ -</u>       | <u>\$ -</u>       | <u>\$ -</u>       | <u>\$ -</u>       |

# Schedule of Retired Members by Benefit Type - Pension Benefits

As of December 31, 2017

| Amount of Monthly<br>Pension Benefit | Number of<br>Recipients | Type of Pension Benefit |              | Option Selected |              |            |
|--------------------------------------|-------------------------|-------------------------|--------------|-----------------|--------------|------------|
|                                      |                         | 1                       | 2            | 1               | 2            | 3          |
| \$ 1 – \$ 500                        | 1,848                   | 1,280                   | 568          | 1,164           | 611          | 73         |
| 501 – 1,000                          | 1,845                   | 1,210                   | 635          | 1,231           | 579          | 35         |
| 1,001 – 1,500                        | 1,534                   | 1,137                   | 397          | 997             | 537          | 0          |
| 1,501 – 2,000                        | 1,359                   | 1,075                   | 284          | 857             | 501          | 1          |
| 2,001 – 2,500                        | 1,340                   | 1,127                   | 213          | 814             | 526          | 0          |
| 2,501 – 3,000                        | 1,418                   | 1,232                   | 186          | 856             | 562          | 0          |
| 3,001 – 3,500                        | 1,242                   | 1,068                   | 174          | 720             | 522          | 0          |
| 3,501 – 4,000                        | 1,267                   | 1,159                   | 108          | 729             | 538          | 0          |
| 4,001 – 4,500                        | 1,050                   | 974                     | 76           | 564             | 486          | 0          |
| 4,501 – 5,000                        | 988                     | 951                     | 37           | 452             | 536          | 0          |
| 5,001 – 5,500                        | 933                     | 920                     | 13           | 395             | 538          | 0          |
| 5,501 – 6,000                        | 699                     | 689                     | 10           | 269             | 430          | 0          |
| 6,001 – 6,500                        | 765                     | 760                     | 5            | 275             | 490          | 0          |
| 6,501 – 7,000                        | 605                     | 601                     | 4            | 230             | 375          | 0          |
| 7,001 – 7,500                        | 335                     | 333                     | 2            | 134             | 201          | 0          |
| 7,501 – 8,000                        | 270                     | 268                     | 2            | 99              | 171          | 0          |
| 8,001 – 8,500                        | 202                     | 199                     | 3            | 68              | 134          | 0          |
| 8,501 – 9,000                        | 115                     | 115                     | 0            | 35              | 80           | 0          |
| 9,001 – 9,500                        | 63                      | 61                      | 2            | 18              | 45           | 0          |
| 9,501 – 10,000                       | 23                      | 20                      | 3            | 8               | 15           | 0          |
| 10,001 – 10,500                      | 40                      | 38                      | 2            | 9               | 31           | 0          |
| 10,501 – 11,000                      | 18                      | 18                      | 0            | 1               | 17           | 0          |
| 11,001 – 11,500                      | 19                      | 18                      | 1            | 4               | 15           | 0          |
| 11,501 – 12,000                      | 25                      | 23                      | 2            | 6               | 19           | 0          |
| 12,001 – 12,500                      | 24                      | 24                      | 0            | 6               | 18           | 0          |
| 12,501 – 13,000                      | 18                      | 18                      | 0            | 4               | 14           | 0          |
| 13,001 – 13,500                      | 16                      | 16                      | 0            | 5               | 11           | 0          |
| 13,501 – 14,000                      | 13                      | 13                      | 0            | 1               | 12           | 0          |
| 14,001 – 14,500                      | 21                      | 21                      | 0            | 6               | 15           | 0          |
| 14,501 – 15,000                      | 11                      | 11                      | 0            | 2               | 9            | 0          |
| Over \$15,000                        | 111                     | 109                     | 2            | 28              | 83           | 0          |
| <b>Totals</b>                        | <b>18,217</b>           | <b>15,488</b>           | <b>2,729</b> | <b>9,987</b>    | <b>8,121</b> | <b>109</b> |

**Type of Pension Benefit**

1. Regular retirement
2. Survivor payment

**Option Selected**

1. Whole Life Annuity
2. 65% Joint and Contingent Annuity
3. Temporary Annuity

## Schedule of Retired Members by Benefit Type - Postemployment Healthcare

As of December 31, 2017

| Amount of Monthly Pension Benefit | Number of Recipients | Type of Pension Benefit |         | Option Selected |       |   |
|-----------------------------------|----------------------|-------------------------|---------|-----------------|-------|---|
|                                   |                      | 1                       | 2       | 1               | 2     | 3 |
| \$ 1 – \$ 500                     | 143                  | 57                      | 86      | 113             | 21    | 9 |
| 501 – 1,000                       | 339                  | 132                     | 207     | 280             | 59    | 0 |
| 1,001 – 1,500                     | 473                  | 295                     | 178     | 360             | 113   | 0 |
| 1,501 – 2,000                     | 594                  | 439                     | 155     | 419             | 175   | 0 |
| 2,001 – 2,500                     | 680                  | 561                     | 119     | 452             | 228   | 0 |
| 2,501 – 3,000                     | 805                  | 686                     | 119     | 542             | 263   | 0 |
| 3,001 – 3,500                     | 757                  | 635                     | 122     | 490             | 267   | 0 |
| 3,501 – 4,000                     | 842                  | 769                     | 73      | 552             | 290   | 0 |
| 4,001 – 4,500                     | 691                  | 638                     | 53      | 427             | 264   | 0 |
| 4,501 – 5,000                     | 629                  | 600                     | 29      | 339             | 290   | 0 |
| 5,001 – 5,500                     | 654                  | 645                     | 9       | 326             | 328   | 0 |
| 5,501 – 6,000                     | 473                  | 466                     | 7       | 225             | 248   | 0 |
| 6,001 – 6,500                     | 528                  | 525                     | 3       | 227             | 301   | 0 |
| 6,501 – 7,000                     | 449                  | 446                     | 3       | 205             | 244   | 0 |
| 7,001 – 7,500                     | 245                  | 243                     | 2       | 119             | 126   | 0 |
| 7,501 – 8,000                     | 189                  | 187                     | 2       | 91              | 98    | 0 |
| 8,001 – 8,500                     | 161                  | 158                     | 3       | 62              | 99    | 0 |
| 8,501 – 9,000                     | 77                   | 77                      | 0       | 28              | 49    | 0 |
| 9,001 – 9,500                     | 41                   | 40                      | 1       | 12              | 29    | 0 |
| 9,501 – 10,000                    | 14                   | 12                      | 2       | 6               | 8     | 0 |
| 10,001 – 10,500                   | 27                   | 25                      | 2       | 7               | 20    | 0 |
| 10,501 – 11,000                   | 15                   | 15                      | 0       | 1               | 14    | 0 |
| 11,001 – 11,500                   | 10                   | 9                       | 1       | 3               | 7     | 0 |
| 11,501 – 12,000                   | 20                   | 18                      | 2       | 6               | 14    | 0 |
| 12,001 – 12,500                   | 17                   | 17                      | 0       | 5               | 12    | 0 |
| 12,501 – 13,000                   | 14                   | 14                      | 0       | 3               | 11    | 0 |
| 13,001 – 13,500                   | 6                    | 6                       | 0       | 1               | 5     | 0 |
| 13,501 – 14,000                   | 10                   | 10                      | 0       | 1               | 9     | 0 |
| 14,001 – 14,500                   | 13                   | 13                      | 0       | 5               | 8     | 0 |
| 14,501 – 15,000                   | 9                    | 9                       | 0       | 1               | 8     | 0 |
| Over \$15,000                     | 72                   | 71                      | 1       | 18              | 54    | 0 |
|                                   | 8,997                | 7,818                   | 1,179 # | 5,326           | 3,662 | 9 |

**Type of Pension Benefit**

1. Regular retirement
2. Survivor payment

**Option Selected**

1. Whole Life Annuity
2. 65% Joint and Contingent Annuity
3. Temporary Annuity

# Schedule of Average Benefit Payments - Pension Benefits

|      |                                      | Years of Credited Service |            |              |              |              |              |            |
|------|--------------------------------------|---------------------------|------------|--------------|--------------|--------------|--------------|------------|
|      |                                      | <u>0-4</u>                | <u>5-9</u> | <u>10-14</u> | <u>15-19</u> | <u>20-24</u> | <u>25-29</u> | <u>30+</u> |
| 2008 | Average Monthly Pension              | \$ 382                    | \$1,368    | \$1,871      | \$2,751      | \$3,394      | \$4,441      | \$4,575    |
|      | Average Monthly Final Average Salary | N/A                       | N/A        | \$5,719      | \$5,540      | \$5,682      | \$6,219      | \$6,048    |
|      | Number of New Retirees               | 69                        | 43         | 121          | 128          | 121          | 76           | 91         |
| 2007 | Average Monthly Pension              | \$ 302                    | \$1,311    | \$2,055      | \$2,671      | \$3,682      | \$3,854      | \$4,491    |
|      | Average Monthly Final Average Salary | N/A                       | N/A        | \$6,649      | \$5,778      | \$6,095      | \$5,931      | \$5,992    |
|      | Number of New Retirees               | 58                        | 30         | 77           | 96           | 100          | 59           | 120        |
| 2010 | Average Monthly Pension              | \$ 335                    | \$1,144    | \$1,855      | \$2,598      | \$3,349      | \$3,968      | \$4,278    |
|      | Average Monthly Final Average Salary | \$5,927                   | \$6,780    | \$5,616      | \$5,512      | \$5,319      | \$5,466      | \$5,408    |
|      | Number of New Retirees               | 74                        | 38         | 92           | 122          | 153          | 72           | 176        |
| 2011 | Average Monthly Pension              | \$ 439                    | \$ 955     | \$1,931      | \$2,705      | \$3,686      | \$4,316      | \$4,537    |
|      | Average Monthly Final Average Salary | \$6,747                   | \$6,114    | \$6,090      | \$5,667      | \$5,948      | \$6,123      | \$5,712    |
|      | Number of New Retirees               | 74                        | 30         | 138          | 157          | 212          | 131          | 267        |
| 2012 | Average Monthly Pension              | \$ 432                    | \$ 982     | \$1,828      | \$2,579      | \$3,273      | \$4,273      | \$4,578    |
|      | Average Monthly Final Average Salary | \$7,369                   | \$6,598    | \$5,733      | \$5,475      | \$5,391      | \$5,882      | \$5,795    |
|      | Number of New Retirees               | 97                        | 35         | 110          | 167          | 210          | 113          | 287        |
| 2013 | Average Monthly Pension              | \$ 469                    | \$1,150    | \$1,864      | \$2,567      | \$3,334      | \$4,864      | \$4,813    |
|      | Average Monthly Final Average Salary | \$7,331                   | \$7,653    | \$5,999      | \$5,419      | \$5,597      | \$6,609      | \$6,087    |
|      | Number of New Retirees               | 60                        | 44         | 113          | 123          | 168          | 132          | 275        |
| 2014 | Average Monthly Pension              | \$ 421                    | \$1,336    | \$1,767      | \$2,643      | \$3,770      | \$4,620      | \$4,829    |
|      | Average Monthly Final Average Salary | \$6,611                   | \$8,364    | \$5,943      | \$5,968      | \$6,296      | \$6,447      | \$6,131    |
|      | Number of New Retirees               | 53                        | 33         | 104          | 119          | 155          | 135          | 246        |
| 2015 | Average Monthly Pension              | \$ 485                    | \$1,153    | \$1,756      | \$2,683      | \$3,696      | \$4,796      | \$5,011    |
|      | Average Monthly Final Average Salary | \$8,264                   | \$7,364    | \$6,060      | \$6,286      | \$6,382      | \$6,770      | \$6,363    |
|      | Number of New Retirees               | 73                        | 43         | 106          | 110          | 180          | 165          | 329        |
| 2016 | Average Monthly Pension              | \$ 466                    | \$1,255    | \$2,105      | \$2,838      | \$3,683      | \$4,772      | \$4,977    |
|      | Average Monthly Final Average Salary | \$7,292                   | \$8,242    | \$6,926      | \$6,393      | \$6,256      | \$6,887      | \$6,339    |
|      | Number of New Retirees               | 44                        | 31         | 101          | 108          | 131          | 128          | 233        |
| 2017 | Average Monthly Pension              | \$ 431                    | \$1,315    | \$2,133      | \$2,875      | \$3,796      | \$4,577      | \$5,106    |
|      | Average Monthly Final Average Salary | \$7,456                   | \$7,640    | \$6,952      | \$6,696      | \$6,670      | \$6,508      | \$6,518    |
|      | Number of New Retirees               | 49                        | 35         | 84           | 100          | 136          | 173          | 261        |

N/A - Not Available



## Schedule of Average Benefit Payments - Postemployment Healthcare

|      |                                      | Years of Credited Service |            |              |              |              |              |            |
|------|--------------------------------------|---------------------------|------------|--------------|--------------|--------------|--------------|------------|
|      |                                      | <u>0-4</u>                | <u>5-9</u> | <u>10-14</u> | <u>15-19</u> | <u>20-24</u> | <u>25-29</u> | <u>30+</u> |
| 2008 | Average Monthly Pension              | \$ 150                    | \$1,238    | \$1,830      | \$3,046      | \$3,418      | \$4,317      | \$4,585    |
|      | Average Monthly Final Average Salary | N/A                       | N/A        | \$5,050      | \$5,941      | \$6,128      | \$5,920      | \$6,016    |
|      | Number of New Retirees               | 1                         | 10         | 62           | 76           | 70           | 47           | 72         |
| 2009 | Average Monthly Pension              | \$ 399                    | \$ 0       | \$2,031      | \$2,672      | \$3,434      | \$3,906      | \$4,398    |
|      | Average Monthly Final Average Salary | N/A                       | \$ 0       | \$6,679      | \$5,804      | \$6,652      | \$5,994      | \$6,031    |
|      | Number of New Retirees               | 4                         | 0          | 31           | 64           | 46           | 41           | 88         |
| 2010 | Average Monthly Pension              | \$ 199                    | \$1,468    | \$1,931      | \$2,784      | \$3,273      | \$4,141      | \$4,239    |
|      | Average Monthly Final Average Salary | \$ 2,747                  | \$7,743    | \$5,740      | \$5,673      | \$5,151      | \$5,639      | \$5,361    |
|      | Number of New Retirees               | 1                         | 5          | 41           | 72           | 110          | 58           | 118        |
| 2011 | Average Monthly Pension              | \$ 239                    | \$ 783     | \$1,839      | \$2,852      | \$3,787      | \$4,056      | \$4,574    |
|      | Average Monthly Final Average Salary | \$ 4,669                  | \$5,044    | \$5,376      | \$5,729      | \$5,991      | \$5,710      | \$5,750    |
|      | Number of New Retirees               | 2                         | 7          | 58           | 89           | 144          | 96           | 196        |
| 2012 | Average Monthly Pension              | \$ 635                    | \$1,127    | \$1,767      | \$2,746      | \$3,462      | \$4,572      | \$4,479    |
|      | Average Monthly Final Average Salary | \$ 5,149                  | \$7,880    | \$5,489      | \$5,552      | \$5,457      | \$6,193      | \$5,672    |
|      | Number of New Retirees               | 2                         | 4          | 36           | 88           | 142          | 82           | 197        |
| 2013 | Average Monthly Pension              | \$ 607                    | \$ 868     | \$2,014      | \$2,674      | \$3,562      | \$4,739      | \$4,705    |
|      | Average Monthly Final Average Salary | \$ 5,833                  | \$4,857    | \$6,140      | \$5,441      | \$5,737      | \$6,441      | \$5,952    |
|      | Number of New Retirees               | 1                         | 5          | 48           | 76           | 110          | 87           | 190        |
| 2014 | Average Monthly Pension              | \$ 0                      | \$ 609     | \$1,786      | \$2,682      | \$3,631      | \$4,768      | \$4,781    |
|      | Average Monthly Final Average Salary | \$ 0                      | \$4,183    | \$5,834      | \$5,718      | \$6,035      | \$6,521      | \$6,062    |
|      | Number of New Retirees               | 0                         | 4          | 31           | 63           | 104          | 97           | 162        |
| 2015 | Average Monthly Pension              | \$ 2,419                  | \$1,150    | \$1,915      | \$3,078      | \$3,881      | \$4,965      | \$4,860    |
|      | Average Monthly Final Average Salary | \$26,180                  | \$8,620    | \$6,239      | \$6,854      | \$6,375      | \$6,890      | \$6,175    |
|      | Number of New Retirees               | 1                         | 5          | 37           | 60           | 101          | 95           | 232        |
| 2016 | Average Monthly Pension              | \$ 257                    | \$1,148    | \$2,236      | \$3,009      | \$3,860      | \$5,242      | \$4,893    |
|      | Average Monthly Final Average Salary | \$ 4,469                  | \$6,816    | \$7,156      | \$6,548      | \$6,363      | \$7,282      | \$6,219    |
|      | Number of New Retirees               | 1                         | 5          | 36           | 54           | 72           | 80           | 154        |
| 2017 | Average Monthly Pension              | \$ 0                      | 1,693      | 2,013        | 2,873        | 4,136        | 4,729        | 5,047      |
|      | Average Monthly Final Average Salary | \$ 0                      | 13,707     | 6,838        | 6,506        | 7,098        | 6,615        | 6,441      |
|      | Number of New Retirees               | 0                         | 3          | 18           | 41           | 77           | 106          | 157        |

*N/A - Not Available*

# Schedule of Principal Participating Employers - Pension Benefits and Postemployment Healthcare Combined

As of December 31, 2017 and 2008

| <b><u>Participating<br/>Employer</u></b>   | <b><u>2017</u></b>                  |   | <b><u>2008</u></b>                  |   |
|--|-------------------------------------|---|-------------------------------------|---|
|  | <b><u>Covered<br/>Employees</u></b> | <b><u>Percentage of Total<br/>Covered Employees</u></b> | <b><u>Covered<br/>Employees</u></b> | <b><u>Percentage of Total<br/>Covered Employees</u></b> |
| Cook County  | 20,319                              | 99.85%  | 23,408                              | 99.88%  |
| County Employees'<br>and Officers' Annuity<br>and Benefit Fund<br>of Cook County | <u>30</u>                           | <u>0.15%</u>  | <u>28</u>                           | <u>0.12%</u>  |
| Total  | <u>20,349</u>                       | <u>100.00%</u>  | <u>23,436</u>                       | <u>100.00%</u>  |

## Additional Schedules Required by Employer

### Schedule of Investment Rate of Return - Pension Benefits and Postemployment Healthcare Combined

| <u>Year Ended<br/>December 31,</u> | <u>Investment Rate<br/>of Return (Net of Fees)</u> |
|------------------------------------|--|
| 2008                               | -24.5%   |
| 2009                               | 18.0%  |
| 2010                               | 12.4%  |
| 2011                               | 1.2%   |
| 2012                               | 12.5%  |
| 2013                               | 15.1%  |
| 2014                               | 5.9%   |
| 2015                               | -0.1%  |
| 2016                               | 7.7%   |
| 2017                               | 15.4%  |

### Schedule of Actuarial Value of Assets vs. Fair Value of Assets - Pension Benefits and Postemployment Healthcare Combined

| <u>Year Ended<br/>December 31,</u> | <u>Actuarial Value<br/>of Assets</u> | <u>Fair Value<br/>of Assets</u> | <u>Actuarial Value as a<br/>Percentage of Fair Value</u> |
|------------------------------------|--------------------------------------|---------------------------------|--|
| 2008                               | \$8,036,074,797                      | \$6,069,280,072                 | 132.4%   |
| 2009                               | 7,945,567,096                        | 6,929,485,914                   | 114.7%   |
| 2010                               | 7,982,368,659                        | 7,574,653,612                   | 105.4%   |
| 2011                               | 7,897,102,116                        | 7,441,243,250                   | 106.1%   |
| 2012                               | 7,833,882,926                        | 8,059,935,628                   | 97.2%  |
| 2013                               | 8,381,444,287                        | 8,927,366,656                   | 93.9%  |
| 2014                               | 8,810,509,070                        | 9,068,398,780                   | 97.2%  |
| 2015                               | 8,991,018,918                        | 8,643,044,275                   | 104.0%   |
| 2016                               | 9,488,223,349                        | 9,115,657,870                   | 104.1%   |
| 2017                               | 10,148,203,834                       | 10,407,883,443                  | 97.5%  |

### Schedule of Employer Contributions - Pension Benefits and Postemployment Healthcare Combined

| <u>Year Ended<br/>December 31,</u> | <u>Actuarially Required<br/>Contribution (ARC)</u> | <u>Tax Levy<br/>Requested</u> | <u>Actual Employer<br/>Contribution</u> | <u>Percentage of<br/>ARC Contributed</u> |
|------------------------------------|--|-------------------------------|---|--|
| 2008                               | \$406,625,773                                      | \$183,124,000                 | \$188,008,670                           | 46.2%                                    |
| 2009                               | 468,181,943  | 186,099,854                   | 188,285,317                             | 40.2%                                    |
| 2010                               | 572,318,384  | 186,523,677                   | 184,722,634                             | 32.3%                                    |
| 2011                               | 613,952,848  | 192,234,211                   | 198,837,424                             | 32.4%                                    |
| 2012                               | 655,800,100  | 196,139,483                   | 190,720,776                             | 29.1%                                    |
| 2013                               | 719,890,057  | 192,969,505                   | 187,817,644                             | 26.1%                                    |
| 2014                               | 634,722,132  | 194,668,229                   | 190,032,872                             | 29.9%                                    |
| 2015                               | 639,794,759  | 192,786,468                   | 186,832,321                             | 29.2%                                    |
| 2016                               | 696,007,249  | 195,653,930                   | 464,268,404 <sup>1</sup>                | 66.7%                                    |
| 2017                               | 691,620,570  | 208,226,206                   | 559,205,626 <sup>1</sup>                | 80.9%                                    |

<sup>1</sup>. Includes supplemental employer contribution of \$353,800,000..

## STATISTICAL SECTION

### Additional Schedules Required by Employer (continued)

#### Schedule of Financial Condition - Pension Benefits and Postemployment Healthcare Combined For year ended December 31, 2017, with comparative totals for 9 years

|  | <u>2017</u>            | <u>2016</u>            | <u>2015</u>            | <u>2014</u>             | <u>2013</u>             |
|--|------------------------|------------------------|------------------------|-------------------------|-------------------------|
| Beginning Net Position (Fair Value)      | \$ 8,643,044,275       | \$9,068,398,780        | \$ 8,927,366,656       | \$ 8,059,935,628        |                         |
| Additions:                               |                        |                        |                        |                         |                         |
| Employer contributions                   | 559,205,626            | 464,268,404            | 186,832,321            | 190,032,872             | 187,817,644             |
| Employee contributions                   | 138,826,184            | 139,355,592            | 137,707,719            | 129,325,318             | 127,593,220             |
| Annuitant health benefit contributions   | -                      | 41,650,333             | 37,635,349             | 37,358,502              | 35,927,206              |
| Net investment income (loss)             | 1,399,625,874          | 629,442,470            | (21,896,696)           | 488,890,897             | 1,179,440,119           |
| Other                                    | <u>23,321,813</u>      | <u>14,019,340</u>      | <u>11,457,843</u>      | <u>9,742,062</u>        | <u>8,547,729</u>        |
| Total additions                          | <u>2,120,979,497</u>   | <u>1,288,736,139</u>   | <u>351,736,536</u>     | <u>855,349,651</u>      | <u>1,539,325,918</u>    |
| Deductions:                              |                        |                        |                        |                         |                         |
| Benefits                                 | 790,352,526            | 784,046,767            | 738,666,760            | 682,959,960             | 637,697,226             |
| Refunds                                  | 32,995,364             | 26,702,222             | 33,273,171             | 26,347,361              | 29,873,030              |
| Administrative expenses                  | <u>5,406,034</u>       | <u>5,373,555</u>       | <u>5,151,110</u>       | <u>5,010,206</u>        | <u>4,324,634</u>        |
| Total deductions                         | <u>828,753,924</u>     | <u>816,122,544</u>     | <u>777,091,041</u>     | <u>714,317,527</u>      | <u>671,894,890</u>      |
| Ending Net Position (Fair Value)         | <u>\$1,292,225,573</u> | <u>\$9,115,657,870</u> | <u>\$8,643,044,275</u> | <u>\$ 9,068,398,780</u> | <u>\$ 8,927,366,656</u> |
| Actuarial Value of Assets                | 10,148,203,834         | 9,488,223,349          | 8,991,018,918          | 8,810,509,070           | 8,381,444,287           |
| Actuarial Accrued Liabilities (AAL)      | 16,889,499,662         | 16,726,457,108         | 16,232,185,534         | 15,318,790,688          | 14,812,087,677          |
| Unfunded AAL (UAAL)<br>(Fair Value)      | 15,597,274,089         | 7,610,799,238          | 7,589,141,259          | 6,250,391,908           | 5,884,721,021           |
| Unfunded AAL (UAAL)<br>(Actuarial Value) | 6,741,295,828          | 7,238,233,759          | 7,241,166,616          | 6,508,281,618           | 6,430,643,390           |
| Funded Ratio (Fair Value)                | 7.7%                   | 54.5%                  | 53.2%                  | 59.2%                   | 60.3%                   |
| Funded Ratio (Actuarial Value)           | 60.1%                  | 56.7%                  | 55.4%                  | 57.5%                   | 56.6%                   |

\* Beginning 2017, the annuitants Healthcare contribution (\$46,679,437 in CY 2017) is netted against Healthcare benefits expense.

Additional Schedules Required by Employer (continued)

**Schedule of Financial Condition - Pension Benefits and Postemployment Healthcare Combined  
For year ended December 31, 2017, with comparative totals for 9 years (continued)**

|  | <u>2012</u>            | <u>2011</u>             | <u>2010</u>            | <u>2009</u>            | <u>2008</u>            |
|--|------------------------|-------------------------|------------------------|------------------------|------------------------|
| Beginning Net Position (Fair Value)      | \$7,441,243,250        | \$ 7,574,653,612        | \$6,929,485,914        | \$6,069,280,072        | \$8,069,709,709        |
| Additions:                               |                        |                         |                        |                        |                        |
| Employer contributions                   | 190,720,776            | 195,337,621             | 181,509,323            | 183,713,870            | 183,916,221            |
| Employee contributions                   | 128,869,508            | 127,577,473             | 129,449,866            | 127,795,881            | 123,776,705            |
| Annuitant health benefit contributions   | 33,948,728             | 33,236,282              | 30,108,884             | 28,809,395             | 29,074,233             |
| Net investment income (loss)             | 887,687,519            | 82,701,033              | 833,052,844            | 1,013,615,250          | (1,858,853,846)        |
| Other                                    | 10,190,689             | 17,614,316              | 12,795,846             | 11,741,894             | 7,081,386              |
| Total additions                          | <u>1,251,417,220</u>   | <u>456,466,725</u>      | <u>1,186,916,763</u>   | <u>1,365,676,290</u>   | <u>(1,515,005,301)</u> |
| Deductions:                              |                        |                         |                        |                        |                        |
| Benefits                                 | 595,339,763            | 556,632,909             | 512,632,292            | 480,817,250            | 456,527,698            |
| Refunds                                  | 33,081,726             | 29,165,335              | 25,041,818             | 20,404,911             | 24,724,102             |
| Administrative expenses                  | 4,303,353              | 4,078,843               | 4,074,955              | 4,248,287              | 4,172,536              |
| Total deductions                         | <u>632,724,842</u>     | <u>589,877,087</u>      | <u>541,749,065</u>     | <u>505,470,448</u>     | <u>485,424,336</u>     |
| Ending Net Position (Fair Value)         | <u>\$8,059,935,628</u> | <u>\$ 7,441,243,250</u> | <u>\$7,574,653,612</u> | <u>\$6,929,485,914</u> | <u>\$6,069,280,072</u> |
| Actuarial Value of Assets                | 7,833,882,926          | 7,897,102,116           | 7,982,368,659          | 7,945,567,096          | 8,036,074,797          |
| Actuarial Accrued Liabilities (AAL)      | 14,630,250,955         | 13,724,012,399          | 13,142,137,175         | 12,575,515,749         | 11,073,181,349         |
| Unfunded AAL (UAAL)<br>(Fair Value)      | 6,570,315,327          | 6,282,769,149           | 5,567,483,563          | 5,646,029,835          | 5,003,901,277          |
| Unfunded AAL (UAAL)<br>(Actuarial Value) | 6,796,368,029          | 5,826,910,283           | 5,159,768,516          | 4,629,948,653          | 3,037,106,552          |
| Funded Ratio (Fair Value)                | 55.1%                  | 54.2%                   | 57.6%                  | 55.1%                  | 54.8%                  |
| Funded Ratio (Actuarial Value)           | 53.5%                  | 57.5%                   | 60.7%                  | 63.2%                  | 72.6%                  |

STATISTICAL SECTION

Additional Schedules Required by Employer (continued)

Schedule of Funding Progress - Pension and Postemployment Healthcare Combined

| <u>Year Ended<br/>December 31,</u> | <u>Actuarial Accrued<br/>Liabilities (AAL)</u> | <u>Actuarial Value<br/>of Assets</u> | <u>Fair Value<br/>of Net Position</u> | <u>Unfunded AAL (UAAL)<br/>(Actuarial Value)</u> |
|------------------------------------|--|--------------------------------------|---------------------------------------|--|
| 2007                               | \$10,423,729,900                               | \$8,059,879,804                      | \$8,069,709,709                       | \$2,363,850,096                                  |
| 2008                               | 11,073,181,349                                 | 8,036,074,797                        | 6,069,280,072                         | 3,037,106,552                                    |
| 2009                               | 12,575,515,749                                 | 7,945,567,096                        | 6,929,485,914                         | 4,629,948,653                                    |
| 2010                               | 13,142,137,175                                 | 7,982,368,659                        | 7,574,653,612                         | 5,159,768,516                                    |
| 2011                               | 13,724,012,399                                 | 7,897,102,116                        | 7,441,243,250                         | 5,826,910,283                                    |
| 2012                               | 14,630,250,955                                 | 7,833,882,926                        | 8,059,935,628                         | 6,796,368,029                                    |
| 2013                               | 14,812,087,677                                 | 8,381,444,287                        | 8,927,366,656                         | 6,430,643,390                                    |
| 2014                               | 15,318,790,688                                 | 8,810,509,070                        | 9,068,398,780                         | 6,508,281,618                                    |
| 2015                               | 16,232,185,534                                 | 8,991,018,918                        | 8,643,044,275                         | 7,241,166,616                                    |
| 2016                               | 16,726,457,108                                 | 9,488,223,349                        | 9,115,657,870                         | 7,238,233,759                                    |
| 2017                               | 16,889,499,662                                 | 10,148,203,834                       | 10,407,883,443                        | 6,741,295,828                                    |

Schedule of Funding Progress - Pension Benefits

| <u>Year Ended<br/>December 31,</u> | <u>Actuarial Accrued<br/>Liabilities (AAL)</u> | <u>Actuarial Value<br/>of Assets</u> | <u>Fair Value<br/>of Net Position</u> | <u>Unfunded AAL (UAAL)<br/>(Actuarial Value)</u> |
|------------------------------------|--|--------------------------------------|---------------------------------------|--|
| 2008                               | \$10,097,027,865                               | \$8,036,074,797                      | \$6,069,280,072                       | \$2,060,953,068                                  |
| 2009                               | 11,489,081,298                                 | 7,945,567,096                        | 6,929,485,914                         | 3,543,514,202                                    |
| 2010                               | 12,023,222,885                                 | 7,982,368,659                        | 7,574,653,612                         | 4,040,854,226                                    |
| 2011                               | 12,628,274,561                                 | 7,897,102,116                        | 7,441,243,250                         | 4,731,172,445                                    |
| 2012                               | 13,418,486,943                                 | 7,833,882,926                        | 8,059,935,628                         | 5,584,604,017                                    |
| 2013                               | 13,636,576,177                                 | 8,381,444,287                        | 8,927,366,656                         | 5,255,131,890                                    |
| 2014                               | 14,140,547,353                                 | 8,810,509,070                        | 9,068,398,780                         | 5,330,038,283                                    |
| 2015                               | 14,936,591,336                                 | 8,991,018,918                        | 8,643,044,275                         | 5,945,572,418                                    |
| 2016                               | 15,456,773,985                                 | 9,488,223,349                        | 9,115,657,870                         | 5,968,550,636                                    |
| 2017                               | 15,671,756,443                                 | 10,148,203,834                       | 10,407,883,443                        | 5,523,552,609                                    |

**Schedule of Funding Progress - Pension Benefits and Postemployment Healthcare Combined (cont'd)**

| <u>Unfunded AAL<br/>(UAAL) Fair Value</u> | <u>Funded Ratio<br/>Actuarial Value</u> | <u>Funded Ratio<br/>Fair Value</u> | <u>Covered<br/>Payroll</u> | <u>UAAL as a<br/>Percentage of<br/>Covered Payroll<br/>(Actuarial Value)</u> | <u>UAAL as a<br/>Percentage of<br/>Covered Payroll<br/>(Fair Value)</u> |
|---|---|------------------------------------|----------------------------|--|---|
| \$2,354,020,191                           | 77.3%                                   | 77.4%                              | \$1,370,844,734            | 172.4%   | 171.7%  |
| 5,003,901,277                             | 72.6%                                   | 54.8%                              | \$1,463,372,408            | 207.5%   | 341.9%  |
| 5,646,029,835                             | 63.2%                                   | 55.1%                              | 1,498,161,713              | 309.0%   | 376.9%  |
| 5,567,483,563                             | 60.7%                                   | 57.6%                              | 1,494,093,569              | 345.3%   | 372.6%  |
| 6,282,769,149                             | 57.5%                                   | 54.2%                              | 1,456,444,123              | 400.1%   | 431.4%  |
| 6,570,315,327                             | 53.5%                                   | 55.1%                              | 1,478,253,368              | 459.8%   | 444.5%  |
| 5,884,721,021                             | 56.6%                                   | 60.3%                              | 1,484,269,715              | 433.3%   | 396.5%  |
| 6,250,391,908                             | 57.5%                                   | 59.2%                              | 1,514,550,023              | 429.7%   | 412.7%  |
| 7,589,141,259                             | 55.4%                                   | 53.2%                              | 1,572,417,298              | 460.5%   | 482.6%  |
| 6,481,616,219                             | 60.1%                                   | 61.6%                              | 1,567,480,401              | 430.1%   | 413.5%  |

**Schedule of Funding Progress - Pension Benefits (continued)**

| <u>Unfunded AAL<br/>(UAAL) Fair Value</u> | <u>Funded Ratio<br/>Actuarial Value</u> | <u>Funded Ratio<br/>Fair Value</u> | <u>Covered<br/>Payroll</u> | <u>UAAL as a<br/>Percentage of<br/>Covered Payroll<br/>(Actuarial Value)</u> | <u>UAAL as a<br/>Percentage of<br/>Covered Payroll<br/>(Fair Value)</u> |
|---|---|------------------------------------|----------------------------|--|---|
| \$4,027,747,793                           | 79.6%                                   | 60.1%                              | \$1,463,372,408            | 140.8%   | 275.2%  |
| 4,559,595,384                             | 69.2%                                   | 60.3%                              | 1,498,161,713              | 236.5%   | 304.3%  |
| 4,448,569,273                             | 66.4%                                   | 63.0%                              | 1,494,093,569              | 270.5%   | 297.7%  |
| 5,187,031,311                             | 62.5%                                   | 58.9%                              | 1,456,444,123              | 324.8%   | 356.1%  |
| 5,358,551,315                             | 58.4%                                   | 60.1%                              | 1,478,253,368              | 377.8%   | 362.5%  |
| 4,709,209,521                             | 61.5%                                   | 65.5%                              | 1,484,269,715              | 354.1%   | 317.3%  |
| 5,072,148,573                             | 62.3%                                   | 64.1%                              | 1,514,550,023              | 351.9%   | 334.9%  |
| 6,293,547,061                             | 60.2%                                   | 57.9%                              | 1,572,417,298              | 378.1%   | 400.2%  |
| 6,341,116,115                             | 61.4%                                   | 59.0%                              | 1,580,251,254              | 377.7%   | 401.3%  |
| 5,263,873,000                             | 64.8%                                   | 66.4%                              | 1,567,480,401              | 352.4%   | 335.8%  |

STATISTICAL SECTION

Additional Schedules Required by Employer (continued)

Schedule of Funding Progress - Postemployment Healthcare

| <u>Year Ended<br/>December 31,</u> | <u>Actuarial Accrued<br/>Liabilities (AAL)</u> | <u>Actuarial Value<br/>of Assets</u> | <u>Fair Value<br/>of Net Position</u> | <u>Unfunded AAL (UAAL)<br/>(Actuarial Value)</u> |
|------------------------------------|--|--------------------------------------|---------------------------------------|--|
| 2008                               | \$1,448,828,756                                | \$ -                                 | \$ -                                  | \$1,448,828,756                                  |
| 2009                               | 1,686,872,018                                  | -                                    | -                                     | 1,686,872,018                                    |
| 2010                               | 1,724,622,462                                  | -                                    | -                                     | 1,724,622,462                                    |
| 2011                               | 1,678,571,388                                  | -                                    | -                                     | 1,678,571,388                                    |
| 2012                               | 1,845,609,132                                  | -                                    | -                                     | 1,845,609,132                                    |
| 2013                               | 1,978,767,490                                  | -                                    | -                                     | 1,978,767,490                                    |
| 2014                               | 1,980,088,617                                  | -                                    | -                                     | 1,980,088,617                                    |
| 2015                               | 2,134,106,707                                  | -                                    | -                                     | 2,134,106,707                                    |
| 2016                               | 1,957,804,688                                  | -                                    | -                                     | 1,957,804,688                                    |
| 2017                               | 1,886,616,443                                  | -                                    | -                                     | 1,886,616,443                                    |

Schedule of Components of Change in Unfunded Liability - Pension Benefits and Postemployment Healthcare Combined

| <u>Year Ended<br/>Dec. 31,</u> | <u>Salary Increase<br/>Higher/Lower<br/>than Assumed</u> | <u>Investment<br/>Returns<br/>Higher/Lower<br/>than Assumed</u> | <u>Employer<br/>Contributions<br/>Higher/Lower<br/>than Normal Cost<br/>Plus Interest</u> | <u>Changes in<br/>Actuarial<br/>Assumptions</u> | <u>Plan<br/>Changes</u> | <u>Other<br/>Sources (1)</u> | <u>Total<br/>Change in<br/>Unfunded<br/>Liability</u> |
|--------------------------------|--|---|---|---|-------------------------|------------------------------|---|
| 2008                           | \$ 160,614,779   | \$481,086,534   | \$198,154,784   | \$ -  | -                       | \$ (166,599,641)             | \$ 673,256,456  |
| 2009                           | (138,750,205)  | 534,155,051   | 258,309,848   | 810,786,835                                     | -                       | 128,340,572                  | 1,592,842,101   |
| 2010                           | (185,530,277)  | 364,312,504   | 349,354,012   | -   | -                       | 1,683,624                    | 529,819,863   |
| 2011                           | (138,554,686)  | 459,875,129   | 371,793,485   | -   | -                       | (25,972,161)                 | 667,141,767   |
| 2012                           | 34,073,219   | 376,601,751   | 252,886,106   | -   | -                       | 305,896,670                  | 969,457,746   |
| 2013                           | (184,385,510)  | (586,433,767)   | 513,419,056   | -   | -                       | (108,324,418)                | (365,724,639)   |
| 2014                           | (148,871,075)  | (161,124,113)   | 423,103,748   | -   | -                       | (35,470,332)                 | 77,638,228  |
| 2015                           | 164,977,011  | 61,964,372  | 431,124,367   | -   | -                       | 74,819,248                   | 732,884,998   |
| 2016                           | 2,613,304  | 14,518,350  | 196,813,036   | -   | -                       | (216,877,547)                | (2,932,857)   |
| 2017                           | (78,486,650)   | (59,718,736)  | 93,692,715  | 323,327,660                                     | (50,292,826)            | (78,804,774)                 | (496,937,931)   |



**Schedule of Funding Progress - Postemployment Healthcare (continued)**

| <u>Unfunded AAL<br/>(UAAL) Fair Value</u> | <u>Funded Ratio<br/>Actuarial Value</u> | <u>Funded Ratio<br/>Fair Value</u> | <u>Covered<br/>Payroll</u> | <u>UAAL as a<br/>Percentage of<br/>Covered Payroll<br/>(Actuarial Value)</u> | <u>UAAL as a<br/>Percentage of<br/>Covered Payroll<br/>(Fair Value)</u> |
|---|---|------------------------------------|----------------------------|--|---|
| \$1,448,828,756                           | 0.0%                                    | 0.0%                               | \$1,463,372,408            | 99.0%  | 99.0%   |
| 1,686,872,018                             | 0.0%                                    | 0.0%                               | 1,498,161,713              | 112.6%   | 112.6%  |
| 1,724,622,462                             | 0.0%                                    | 0.0%                               | 1,494,093,569              | 115.4%   | 115.4%  |
| 1,678,571,388                             | 0.0%                                    | 0.0%                               | 1,456,444,123              | 115.3%   | 115.3%  |
| 1,845,609,132                             | 0.0%                                    | 0.0%                               | 1,478,253,368              | 124.9%   | 124.9%  |
| 1,978,767,490                             | 0.0%                                    | 0.0%                               | 1,484,269,715              | 133.3%   | 133.3%  |
| 1,980,088,617                             | 0.0%                                    | 0.0%                               | 1,514,550,023              | 130.7%   | 130.7%  |
| 2,134,106,707                             | 0.0%                                    | 0.0%                               | 1,597,597,077              | 133.6%   | 133.6%  |
| 1,957,804,688                             | 0.0%                                    | 0.0%                               | 1,609,559,234              | 121.6%   | 121.6%  |
| 1,886,616,443                             | 0.0%                                    | 0.0%                               | 1,602,986,483              | 117.7%   | 117.7%  |

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